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Vol. 2

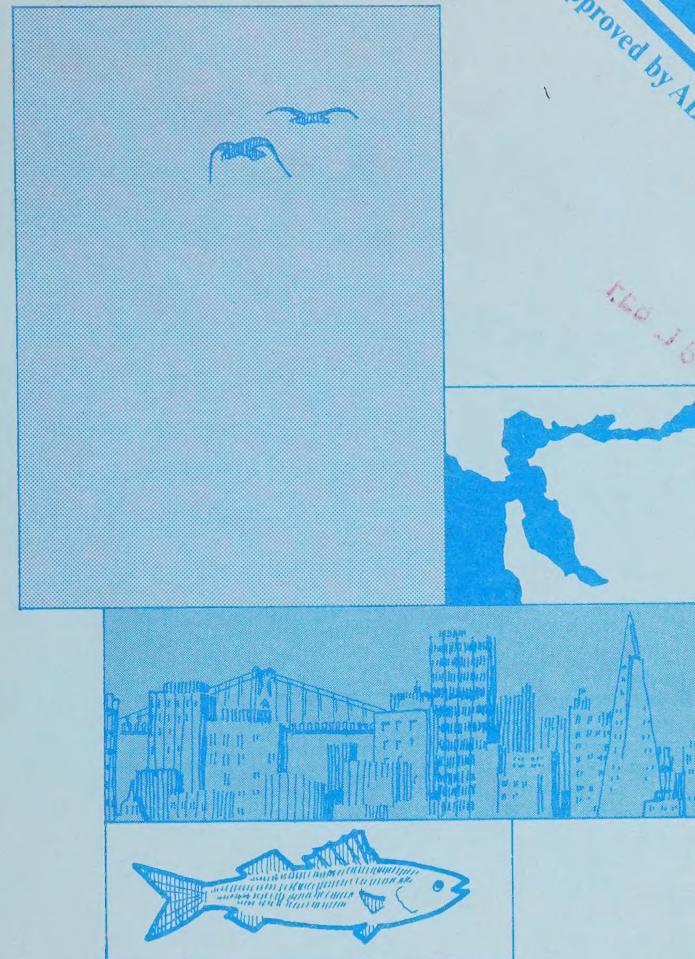
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DRAFT ENVIRONMENTAL MANAGEMENT PLAN FOR THE SAN FRANCISCO BAY REGION

VOLUME II DRAFT ENVIRONMENTAL IMPACT REPORT AND INDEX OF AGENCY RESPONSIBILITIES

December 1977

This plan was prepared by the Association of Bay Area Governments with a grant and other assistance from the Environmental Protection Agency, in cooperation with Bay Area Air Pollution Control District, Metropolitan Transportation Commission, San Francisco Bay Regional Water Quality Control Board and Counties of the Bay Area with assistance of these agencies: ■ Army Corps of Engineers ■ California Air Resources Board ■ California Department of Health ■ California Department of Transportation ■ Council of Bay Area Resource Conservation Districts ■ Governor's Office of Planning and Research ■ Lawrence Berkeley Laboratory ■ Lawrence Livermore Laboratory ■ San Francisco Bay Conservation and Development Commission ■ State Water Resources Control Board ■ State Solid Waste Management Board ■ Wastewater Solids Study

The Association of Bay Area Governments was designated by the State and Federal governments to prepare an Environmental Management Plan for the San Francisco Bay Area. This draft plan is the product of more than 14 months of cooperative effort by the staffs of the participating agencies listed on the front cover--as well as the Environmental Management Task Force, advisory committees and the public.

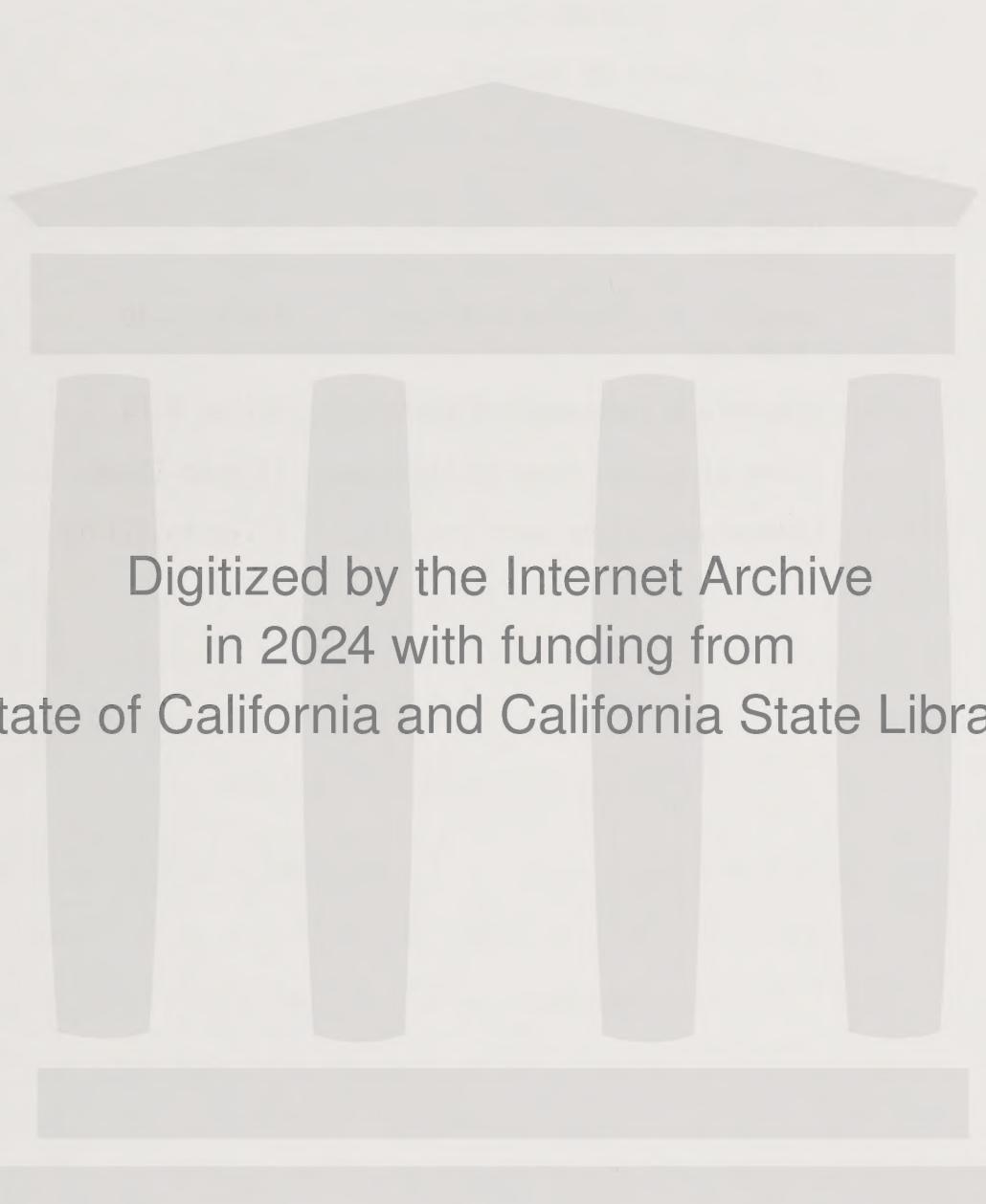
ABAG staff is responsible for the draft plan. Sections of the plan, however, were the specific responsibility of other agencies. In the development of the water quality management plan, the staffs of Bay Area counties drafted the surface runoff plan recommendations. In the air quality plan, the staff of the Bay Area Air Pollution Control District developed the stationary source controls, and the staff of the Metropolitan Transportation Commission developed the transportation controls.

The draft plan was prepared in part under a grant from the Environmental Protection Agency under Section 208 of the Federal Water Pollution Control Act Amendments of 1972. The opinions expressed are not necessarily those of the Environmental Protection Agency.

DRAFT ENVIRONMENTAL MANAGEMENT PLAN
VOLUME II

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Chapter I

**DRAFT ENVIRONMENTAL
IMPACT REPORT**

Библиотека
ДАЧИЗМОНИКІВ ТА ЯРС-
ТЯЧЕВІ ГАЗИ

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INTRODUCTION

The Draft Environmental Management Plan (EMP) for the San Francisco Bay Area provides a comprehensive approach for managing the region's water quality, water supply, solid waste, and air quality. It is the first attempt to integrate these subjects on a regionwide basis.

The specific goals of the Environmental Management Plan are stated in the Work Program, issued in April of 1976: "The goal of the program is to produce an Environmental Management Plan that has the following characteristics:

- *It will lead to the greatest possible improvement in water and air quality and problems caused by solid waste, and will lead to compliance with Federal and State standards and objectives at the earliest possible date.
- *It will not have social, economic, or environmental effects so unacceptable as to prevent implementation."

That goal indicates that identification of impacts would play a key role in the plan development process. It also constitutes a determination that the EMP would have significant effects.*

Comprehensive environmental planning requires a comprehensive approach for impact identification. During the planning process, the potential environmental, institutional/financial, economic and social impacts were identified using an assessment process designed as an integral part of the planning process. While somewhat broader in scope than required, identification of those impacts addresses the requirements of Section 208 (b)(2)(E) of the Federal Water Pollution Control Act Amendments. That subsection requires the identification of environmental, economic and social impacts of carrying out the plan prepared to meet the other requirements of Section 208. The full range of potential impacts (environmental, institutional/financial, economic and social) is identified in Volume I of the Draft EMP.

This document assesses the environmental affects of the Draft EMP, as required by the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). NEPA requires an assessment of the positive and negative effects of a proposal on the environment. CEQA is a more limited statute in that it requires assessment of significant environmental effects.

*Section 15080(a) of the State EIR Guidelines requires the Lead Agency (in this case ABAG) to "conduct an Initial Study to determine if the project may have a significant effect on the environment unless the agency can determine that the project will clearly have a significant effect." Although the EMP's purpose is to benefit the environment of the Bay Area by recommending actions to meet Federal and State standards and objectives, in recognition of the significance of the issues being addressed and the commitment to identify the impacts of the plan, ABAG determined that an Environmental Impact Report was necessary.

Section 15040 of the State EIR Guidelines defines significant environmental effects - "significant effect on the environment means a substantial or potentially substantial adverse change in any of the physical conditions within the area affected by the activity including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance." This document discusses significant environmental effects, which are defined by CEQA as adverse environmental effects. It also discusses positive environmental effects to meet NEPA requirements. In keeping with CEQA mandates, the significant adverse environmental effects are those impacts for which mitigation is discussed.

The assessment of the Draft Environmental Plan is somewhat different than the typical project assessment, which is more commonly the subject of this type of document. The National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA) are primarily intended to require the full disclosure of the impacts of proposed projects on the physical environment. This legislative intent has been interpreted to include planning documents as well as project proposals. The Draft EMP is a plan for the entire region. Its perspective is at the areawide planning level rather than at the level of a specific project. The Draft EMP recommends policies and actions to be implemented to varying degrees on a regional basis. While it is specific in its recommendations, it does not recommend site specific applications of the recommendations. The primary purpose of the Draft EMP is not to describe the projects that must be undertaken to achieve each specific goal, policy or objective, although such projects may be identified in a general way (e.g. the 20-year wastewater treatment project list). The plan will be implemented by cities, counties, special districts and various Regional, State and Federal agencies. As the policies and actions recommended become site specific projects, those agencies will become Lead Agencies under the definitions of CEQA. The site specific projects necessary to meet the objectives laid out in the plan would then be subject to NEPA and CEQA requirements for documentation of the environmental impacts of the proposed actions and alternatives to the proposed actions. Impact identification will retain an integral role in the refinement and specification of alternatives during the continuing environmental management planning process.

IMPACT ASSESSMENT REQUIREMENTS

The Draft EMP addresses four major environmental issues facing the Bay Area. It defines these major environmental problems and indicates what steps are necessary to solve them. The plan is intended to meet key Federal and State environmental standards and objectives. Federal and State statutes, regulations and guidelines govern the development of the draft EMP. Those which are particularly relevant to the assessment process and impact identification are described below.

The National Environmental Policy Act of 1969 (NEPA)

NEPA was enacted by Congress and signed into law on January 1, 1970. Section 102 requires, in part, that all Federal agencies prepare detailed statements of the environmental impacts of "every recommendation or report on proposals

for legislation and other major Federal actions significantly affecting the quality of the human environment." Most Federal agencies have published regulations and guidelines outlining their procedures for complying with NEPA. In order to comply with the Act, the Federal agency either prepares an Environmental Impact Statement (EIS) or files a Negative Declaration indicating the absence of environmental impact.

In general, Federal agencies which administer grant programs (in this case the Environmental Protection Agency) require a grantee (in this case ABAG) to prepare an assessment of the grantee's proposed project or plan prepared with Federal assistance. The Federal agency, however, retains responsibility for issuance of the EIS or Negative Declaration.

The California Environmental Quality Act (CEQA)

This law is the State's counterpart to NEPA. CEQA requires that if the Lead Agency (in this case ABAG) determines that the proposed project will have a significant effect on the environment, an Environmental Impact Report (EIR) will be prepared to assess the significant effects. A plan, such as this Environmental Management Plan, is considered a "project" for the purposes of CEQA. This Draft EIR is prepared (as permitted by law) to fulfill the requirements of NEPA and CEQA. To meet the requirements of an EIR, it addresses these topics:

1. The significant environmental effects of the proposed project.
2. Any significant environmental effects which cannot be avoided if the proposal is implemented.
3. Mitigation measures proposed to minimize the significant effects.
4. Alternatives to the proposed action.
5. The relationship between local short-term uses of the environment and the maintenance and enhancement of long-term productivity.
6. Any significant irreversible environmental changes which would be involved in the proposed action should it be implemented.
7. The growth inducing impact of the proposed action.

This EIR document is organized such that the assessment of the significant environmental effects of each plan element (that is, water quality, water supply, solid waste, and air quality) and of the entire Draft EMP constitute an EIR. All of the above topics are discussed as required by CEQA.

The Federal Water Pollution Control Act

Congress amended the Federal Water Pollution Control Act in 1972. Section 208 of Public Law 92-500 describes the areawide waste treatment management planning program, which authorized preparation of the Draft EMP. Section 208 emphasizes that areawide planning is a process. Part (b) (2) (E) of the section requires that any plan prepared under this process include "...the identification of the measures necessary to carry out the plan...and the economic, social and environmental impacts of carrying out the plan...." The EMP planning process, as required by statute, integrated impact identification into plan development.

Section 511(c) of the Act states that, with the exception of the construction grants program for wastewater treatment facilities and the new source permit program, no action taken under the law would be considered a "major Federal action" triggering the requirement for an EIS. However, in subsequent policy statements, guidelines and regulations EPA reappplied the EIS requirement to preparation of Section 208 plans.*

EPA has emphasized the importance of environmental, economic and social impact identification. EPA "Guidelines for State and Areawide Water Quality Management Program Development" (November 1976) provides guidance on "...integrating environmental, social and economic impact evaluation into the planning process." It further instructs that "...the evaluation must be viewed as an integral part of the planning process. As such, it will be performed throughout the process rather than after the selection of the plan, with citizens and local units of government afforded the opportunity to participate in impact evaluation from the beginning of the planning process."** Chapter III of this Volume of the Draft EMP describes in detail public participation during the plan development process.

The Draft EMP describes the actions necessary to meet key Federal and State air and water quality standards and solid waste management objectives. As an integrated plan for managing the physical environment, it is virtually self-mitigating. Meeting air quality standards will have water quality and solid waste impacts. Meeting solid waste objectives will have impacts on water quality and air quality. Managing water supply and meeting water quality standards and objectives will have air quality and solid waste impacts. Because the Draft Environmental Management Plan is the result of an integrated planning process, the impacts of one plan on another are identified and the significant adverse environmental effects of each plan are mitigated by the other plans.

The Clean Air Act

Congress amended the Clean Air Act in 1977. Public Law 95-95 is the Federal air quality statute. The Air Quality Maintenance Plan portion of the Draft EMP is prepared under its authority. Actions taken under the Clean Air Act are generally not subject to the provisions of NEPA, and thus the EIS requirements would not normally be applicable to the AQMP. Several sections of the 1977 law do, however, contain references to consideration of non-air quality impacts such as energy, employment, cost, public health and environmental impacts.*** Because the AQMP is an integral part of the Draft EMP, identification of the impacts of air quality control measures and strategies proceeded during this planning effort as well. CEQA obligations apply to the AQMP so that an assessment of the significant environmental effects of the AQMP is required.

* "Final Regulations - Preparation of Environmental Impact Statements," 40 CFR, No. 72, Part III, Subpart E. Section 6.504 (a)(1) lists administrative actions covered by EIS Regulations and includes "approval of all section 208 plans according to procedures in 40 CFR 25.1067-2.

** Chapter 13

*** For example, Title I, Section III (g) (4), Title III Section 317, Section 321, Section 323.

The Resource Conservation and Recovery Act (RCRA)

RCRA is the Federal law enacted in 1976 to provide policy guidance on solid waste management. Actions required by it are not subject to the provisions of NEPA, and thus plans prepared to comply with RCRA are not subject to NEPA requirements for an environmental assessment. However, the same reasoning applies to the Solid Waste Management Plan portion of the EMP as to the Air Quality Maintenance Plan portion--both are an integral component of the overall Draft EMP, and the impacts of recommended controls were identified in the planning process. Federal regulations also underscore this notion. Section 6.702(a) (1) (iii) of the "Final Regulations - Preparation of Environmental Impact Statements" states that "...grant applications for the development of comprehensive State, interstate or local solid waste management plans will not require environmental assessment...(however)...a detailed analysis of environmental problems and effects should be part of the planning process."

SUMMARY

The next section describes the assessment process developed to ensure that a comprehensive identification of the impacts occurred as an integral part of the planning process which resulted in the Draft EMP. The process used a broad interpretation of Federal and State requirements for impact identification. The information resulting from the assessment process identifies the potential environmental, institutional/financial, economic and social impacts of plan recommendations. That impact information appears in each chapter of Volume I of the Draft EMP in summary form on the plan recommendation tables.

The identification of the full range of impacts of the Draft EMP complies with the requirements of Section 208(b) (2) (E) to identify environmental, economic and social impacts. It also fulfills the objectives stated in the Work Program goal statement.

This Draft EIR fulfills the obligations of the California Environmental Quality Act to assess the plan's significant effects on the environment.

THE ASSESSMENT PROCESS

The objective of the assessment process developed for the environmental management planning process is to identify the full range of impacts that might be associated with actions taken to meet air, water and solid waste standards and objectives. The process incorporates several assessment techniques developed since the passage of NEPA. Integrated planning and assessment is iterative in nature. In other words, there are many steps in the process of moving from a large number of potential control measures to those selected for recommendation in the plan. The control measures are reassessed several times, each time in greater detail. Each time, the impacts identified serve as a basis for screening out control measures that do not meet the two objectives of the goal statement of the EMP.

Four levels of impact identification occur during the planning process:

- Level One - Identification of the impacts of the candidate control measures* for each element of each management plan
 - (Air quality - stationary sources, mobile sources, transportation controls and land use development controls; Water Quality - municipal, industrial, surface runoff and miscellaneous source controls; Water Supply - supply, conservation and reuse; Solid Waste - municipal, hazardous, resource recovery and sewage solids).
- Level Two - Identification of the impacts of the policies and actions developed for inclusion in the four draft management plans
 - (Air quality, water quality, water supply and solid waste)
- Level Three - Identification of the overall impacts of each of the four management plans
- Level Four - Identification of the cumulative impacts of each plan and thus the entire Draft EMP.

The Assessment Advisory Committee** oversees development of the assessment process and the selection of techniques for impact identification. Surface runoff was a major problem to be addressed. Eight counties in the region contracted with ABAG to develop a county surface runoff control plan (San

* See Appendix A for a list of the candidate control measures for each management plan.

** The Assessment Advisory Committee (AAC) is one of several technical advisory committees established with the consent of the Environmental Management Task Force, the policy advisory committee of the Environmental Management Program. The Planning Procedures Committee, an EMTF subcommittee, directed the formation of the AAC. The AAC is composed of approximately 40 individuals from public agencies, private industry and citizen and environmental groups. Individuals on the committee have experience in impact assessment or expertise in fields such as environmental law, economics and finance.

Francisco had prepared such a plan as part of its wastewater treatment facility planning effort prior to initiation of the EMP effort). Because so many different agency staffs were to be involved in preparing the county surface runoff control plans, ABAG staff felt it important to develop an assessment manual for use by the county staffs in plan preparation. That manual also serves as a prototype for the assessment process used for the entire EMP. The Assessment Procedures Manual was completed in March 1977. The assessment process and tools for impact identification were used by all participants in development of the EMP (ABAG, Metropolitan Transportation Commission, Bay Area Air Pollution Control District, the Wastewater Solids Study, the eight Bay Area county lead agencies and consultants).

The main assessment techniques included in the assessment process and incorporated in the Assessment Procedures Manual are described below.

THE TECHNICAL APPROACH

The Assessment Checklist

Checklists are commonly used tools in environmental impact assessment.¹ They generally present a list of physical environmental characteristics to look at for possible impacts. The Assessment Checklist developed for use in the EMP assessment planning process is more comprehensive in that it is not limited in coverage to physical environmental characteristics. The four major categories of the Assessment Checklist are:

- Environmental Criteria
- Institutional/Financial Criteria
- Economic Criteria
- Social Criteria

The EMTF approved the concept of a checklist and the major categories and referred further development to the Planning Procedures Committee. That committee expanded upon the first draft Checklist (prepared by staff in September 1976) and directed staff to work with the Assessment Advisory Committee. At a series of roundtables held in the nine Bay Area counties in the Fall of 1976, citizens reviewed the criteria on the draft Checklist and proposed additional criteria. Other technical advisory committees also reviewed the draft Checklist. At the November 10, 1976 EMTF meeting, after adding criteria to the list, the Task Force approved an Assessment Checklist (See Appendix B) in final form for use in the EMP planning process.

The approved Assessment Checklist contains more than 100 factors organized into 16 subcategories under the original four major categories. There is no implied weighting of importance in the organization nor are the categories mutually exclusive. Not every factor is applicable to every control measure or plan. The Assessment Checklist merely provides a starting point for impact identification by displaying a large number of factors or criteria potentially impacted by environmental management activities.

Matrix Analysis

The assessment process incorporates matrix analysis, another common impact assessment technique.²

As used in impact assessment, a matrix is a rectangular array of elements in columns and rows offsetting activities against a checklist of potential impacts. A matrix analysis identifies cause-effect relationships. The matrix analyses conducted during the EMP planning process uses the 16 major subcategories of the Assessment Checklist as the row headings and indicates the relative magnitude of the potential impacts.* An example matrix analysis appears in Figure 1. Unlike most matrix analyses that identify only direct adverse impacts, the matrix analysis portion of the EMP assessment process identified impacts (positive and negative) of both a direct and indirect nature.

Matrix analysis also serves a screening function. It indicates where no identifiable link exists (no impact) between an activity and a potential impact. It focuses the impact prediction on the pertinent assessment factors.

Networking

The assessment process also uses networking.³ Networking is a means of recognizing that a series of impacts can be triggered by an action or an impact of an action. For example, should the supply of agricultural lands or production on those lands decrease as the result of a control measure or policy, then economic impacts can be expected (e.g. changes in profits, prices of goods, wages). An impact on fiscal resources (local government revenues) may result from financing a control measure with any number of available financing mechanisms. The financing mechanism (property tax, user charges, etc.) may have social impacts as some financing mechanisms impact special population groups such as the elderly, low-income and minority groups differently. Another example of networking relates to secondary growth impacts. Secondary growth impacts often result when provision of infrastructure (roads, wastewater treatment facilities, reservoirs) stimulates development. Induced growth is often an indirect effect of such projects. If urban development is stimulated by a control measure, a whole series of subsequent impacts may result. For example, public service levels may be strained (police, fire, schools) and the transportation network may not be adequate to handle the increased traffic associated with the development. The supply of critical physical resources (prime agricultural lands) may be reduced as residential and local serving (shopping centers) development occurs.

*The impact potential is rated as follows:

- A = direct, substantial, immediate and significant impact; requires quantitative analysis if possible
- B = direct or indirect impact that might be significant; requires quantitative analysis if possible to determine significance
- C = indirect impact that is marginal, minor; qualitative discussion is acceptable
- = no significant relationship; no detailed discussion required

FIGURE 1 - EXAMPLE MATRIX ANALYSIS

SURFACE RUNOFF CONTROL MEASURE ASSESSMENT MATRIX

	Air Quality	Water Quality	Physical Resources	Energy	Amenities	Institutional	Financial	Prod. of goods services	Income/Invest.	Consumer Expend.	Housing Supply	Phys-Cal Mobility	Health/Safety	Sense of Community	Urban Pattern/Landuse	Equity
<u>I. Prevent Contaminants from Reaching the Surface</u>																
Control chemicals	C	A	B	-	C	A	B	A	A	B	-	-	B	-	-	C
Control dumping & direct discharge	C	A	C	C	B	A	B	B	C	B	-	-	C	B	-	-
Control littering & dogs	C	A	C	-	B	B	B	B	B	B	-	-	B	B	-	C
Control auto and other emissions	A	A	C	A	B	A	B	B	B	B	B	A	B	B	B	A
<u>II. Improve Methods of Collecting or Reducing Contaminant Erosion Prior to Rainstorm</u>																
Street cleaning	B	A	C	C	B	B	A	C	C	C	-	B	B	B	-	-
Clean storm drain system	C	A	C	C	B	C	B	C	-	-	-	-	C	-	-	-
Regrade disturbed areas	C	A	B	-	B	B	B	C	-	-	C	-	B	C	-	-
Reseed or apply veg. cover to bare slopes	-	A	A	C	A	B	B	C	-	-	C	-	B	C	-	-
Control erosion at construction sites	C	A	C	-	C	B	C	C	C	C	C	-	C	-	-	C
Regulate construction schedules	C	A	C	-	C	B	B	C	C	C	B	-	C	-	B	C
Use efficient tillage and plowing practices	C	A	B	C	C	B	C	C	C	C	-	-	B	-	-	C
Insure proper operation of septic tanks	B	A	C	C	C	C	B	C	C	C	C	-	B	C	B	B
<u>III. Reduce Volume and Peak of Storm Water Runoff</u>																
Develop slope density standards	C	A	C	C	B	C	B	C	C	C	C	-	B	C	B	-
Maintain open space	C	A	A	C	A	B	A	C	C	C	B	C	C	B	C	C
Control development patterns	B	A	B	C	C	B	B	C	C	C	B	C	C	C	A	C
Develop buffer strip requirements near streams	-	A	B	-	C	C	C	-	C	-	C	-	C	C	C	-
Develop recreational retention basins	-	A	A	-	B	B	B	C	-	C	C	-	C	C	-	-

Assessment Procedures

The assessment procedures developed for a majority of the assessment factors on the Assessment Checklist describe an approach to use in impact identification. Each of the procedures outlined in the Assessment Procedures Manual is divided into three sections (See Figure 2 - Example Assessment Procedure):

Background:

This section discusses the importance of the assessment factor. It also briefly discusses the potential impacts of most concern. An example of an impact of a control measure on the assessment factor appears set off from the background statements.

Impact Questions:

Using a checklist approach again, this section guides the impact prediction and measurement through a series of suggested questions. The questions identify some of the kinds of impacts that a control measure might have on the assessment factor.

Information Sources:

This section supplements the impact questions section. The sources range from agency contacts to printed material such as maps, plans, special studies, and environmental impact documents. The sources provide a data base or more detailed information for use in identifying impacts.

Many assessment procedures cross reference other assessment procedures to indicate that a series of impacts may result from the primary or initial impact. The cross referencing (networking) ensures identification of both primary and secondary impacts.

Each procedure has an accompanying worksheet. The worksheets document the assumptions and information sources used to identify the potential impacts summarized for each control measure, policy or action on the plan recommendation tables in Volume I of the Draft EMP.

Identification of Impacts

Identification of the impacts of candidate control measures (Level 1 assessment) and policies and actions (Level 2 assessment) occurs in three steps.

Step 1 - Matrix Analysis

Using the 16 subcategories of the Assessment Checklist (row) and the candidate control measures or policies and actions (column), a matrix analysis identifies potential cause-effect relationships between column and row entries.

FIGURE 2 - EXAMPLE ASSESSMENT PROCEDURE

Physical Resources

Effect on land sites with special characteristics

- o Effects on lands uniquely suited for seaport, airport, marina or energy site development

Background:

Seaports, airports, marinas and energy facilities play an important role in a region's economy and vitality. Control measures may impact lands uniquely suited for development for those purposes by competing with or preempting sites with such potential. Control measures may also impact the use of sites suited for development for these purposes by affecting the requisite development and/or operation and maintenance activities.

Example - Control measures which consume land (detention basins, treatment facilities, impoundments) could pre-empt development for such special uses if implemented on/adjacent to proposed sites.

- Requirements for minimum amounts of pervious surface for new construction could affect the usefulness of the site for development as (for example) an airport.

Impact Questions:

Would the control measure have an impact on:

A. The Base

1. lands uniquely suited for development as a seaport, airport, marina or energy facility?
2. lands proposed for such use in regional or local general plans or by private industry?

B. The Activities

1. site preparation activities requisite to development?
2. construction, operation or maintenance activities necessary to use the land for a seaport, airport, marina or energy facility?

Information Sources:

Airport Land Use Commissions, County and City Planning Departments, Metropolitan Transportation Commission, Port Authorities, Corps of Engineers.

"Regional Airport System Plan", ABAG, 1972; County Airport Plans, Preliminary - San Francisco Bay Area In-Depth Study - New Facility Analysis, U.S. Army Corps of Engineers-San Francisco 1976; Channels, Ports and Related Facilities Inventory, U.S. Army Corps of Engineers - San Francisco 1973.

Step 2 - Impact Prediction

Focusing on the potential cause-effect relationships noted in Step 1 and using the appropriate assessment procedures, Step 2 involves predicting impacts. The quantified impacts are based on staff assumptions reflecting current information, research, special studies and modeling results and population, land use and economic projections. A summary statement about the potential impacts is noted on the assessment worksheet.

Step 3 - Impact Summary

Summary impact statements appear on the plan recommendation tables organized by the four major categories (Environmental Impacts, Institutional/Financial Impacts, Economic Impacts and Social Impacts) and subcategories. No impact statements are noted where applicable. (See Figure 3 - An Example Assessment Summary Table)

Because many of the actions proposed to carry out the policy statements have similar impacts, common impacts appear beside the policy statements. The impacts specific to the action appear beside the action statement. All impacts identified in the assessment process appear on the plan recommendation tables in Chapter III through VI of Volume I of the Draft EMP.

Level 3 assessment identifies the significant impacts of each of the four management plans (Water Quality, Solid Waste, Water Supply and Air Quality). The section titled "Benefits and Costs of Plan Recommendations" in each chapter of Volume I of the Draft EMP summarizes significant impacts.

The statements in the "Benefits and Costs of Plan Recommendations" section of each chapter constitute an overall assessment of each plan. The overall impacts are general statements about the impacts of the plan. Because site specific applications of the actions are not recommended, the actual impacts will vary depending on how they are implemented, financed and the locations where they are applied. As the actions are carried out by local governments as site specific projects and proposals, the environmental impacts will be identified and assessed as required by NEPA and CEQA. In addition, impact identification will retain an integral role in the continuing environmental management planning process.

The final phase of the assessment process involves identification of the cumulative impacts or the overall impacts of the Draft EMP. Several activities are involved in the Level 4 assessment effort. One is a matrix analysis to identify cross plan linkages (the impact of one plan on other plans). The matrix lists five elements (air, water quality, solid waste, water supply and surface runoff) along the column and the row. The impacts of one plan on the four other plan elements are identified. (Figure 4 displays the results of that exercise).

FIGURE 3 - AN EXAMPLE ASSESSMENT SUMMARY TABLE

ENVIRONMENTAL IMPACTS	INSTITUTIONAL/FINANCIAL IMPACTS	ECONOMIC IMPACTS	SOCIAL IMPACTS
<u>Air Quality</u>	<u>Financial</u>	<u>Production of Goods and Services</u>	<u>Housing Supply</u>
<ul style="list-style-type: none"> o Localized reductions in dust/particulate matter from construction activities. 	<u>Direct Public Costs of Implementation</u> <ul style="list-style-type: none"> o See County Surface Runoff control Plans Cost Data. o See Council of Bay Area Resource Conservation Districts Handbook of Best Management Practices for example costs. <u>Fiscal Effects on Local Governments</u> <ul style="list-style-type: none"> o Direct impacts on fiscal resources depend on revenue source(s) used - See County Plans. o Permit and plan review fees may offset local costs to implement and enforce. o Performance bonds may offset costs of clean-up. o Savings in operation and maintenance costs (e.g., in reservoirs) of local governments and special districts may result - an estimated \$5 million is spent annually to alleviate lake problems such as siltation, algae blooms, aquatic weeds, fish kills, etc. 	<ul style="list-style-type: none"> o Employment - Creation of job opportunities may result (e.g., landscape and engineering consultants, construction firms). o Increased demand for goods and services may result in some new firms entering market. <u>Income and Investment</u> <ul style="list-style-type: none"> o Effects on wages and salaries depends on control measures effects on production and employment. o Increased profits for firms benefiting from increased demand for goods and services. o Profit of firms and individuals bearing costs of controls should not be affected assuming costs can and will be passed on to the consumer (industry dependent response). 	<ul style="list-style-type: none"> o Decreased supply (e.g., ≤ 200/acre instead of ≥ 400/acre on slopes > 15%) and increased costs of housing (e.g., the average price of a house may increase \$200-600 - an example design and installation cost of a best management practice) may result where erosion controls are a new component of the development approval process.
<u>Water Quality</u>	<u>Institutional</u>	<u>Consumer Expenditures</u>	<u>Physical Mobility</u>
<ul style="list-style-type: none"> o Reduced amounts of sediments and nutrients entering waterbodies from agricultural and construction activities. o Reduced siltation of stream channels, lakes and reservoirs and annual sediment loadings to the Bay contributed by land disruption by human activities. o Reduced turbidity, algae blooms, and oxygen depletion in streams, lakes and reservoirs. o Reduced incidence of impaired use (e.g., water supply) of waterbodies. o Reduced amounts of suspended solids available for chemical, pesticide and heavy metal binding. 	<ul style="list-style-type: none"> o Effective implementation would require the cooperation of numerous public agencies such as National Park Services, U. S. Geological Survey, Corps of Engineers, California Department of Fish & Game, Flood Control and Water Districts, cities and counties. o New or amended ordinances, regulations or administrative rule-making may be required. o Some aspects of erosion control programs may meet with public opposition. o Additional staff resources may be required to implement and enforce the recommendations. 	<ul style="list-style-type: none"> o Where private industry costs to control erosion are passed on in product prices, costs of goods and services will increase. <u>Direct Private Costs of Implementation</u> <p>Example Costs of Erosion Control and Agricultural Management Practices:</p> <p>Hydroseeding/Hydrumulching \$425-900/acre</p> <p>Siltation Berm \$7.33/lineal foot</p> <p>Waterway Fencing \$1-2.75/lineal foot</p> <p>Range Seeding \$18/acre</p> <p>Construction erosion controls for 80 unit subdivision may cost \$500-700/acre.</p>	<ul style="list-style-type: none"> o Localized, temporary disruption in physical mobility during construction activities.
<u>Physical Resources</u>		<u>Sense of Community</u>	<u>Health and Safety</u>
<ul style="list-style-type: none"> o Reduced incidence of burial of aquatic bottom organisms and fish kills may result. o Indirectly benefits productivity of aquatic community by preventing or reducing interference with photosynthesis, elimination of food sources. o Reduced losses of productive topsoil, organic matter should enhance the productivity of agriculture and timber production activities. o May indirectly enhance recreation potential and use of waterbodies and adjacent lands. 		<ul style="list-style-type: none"> o No impacts. 	<ul style="list-style-type: none"> o Indirect public safety benefits of reduced flood peaks and flood risks associated with siltation and alteration of natural flow regimes in streams.
<u>Energy</u>		<u>Equity</u>	<u>Urban Patterns</u>
<ul style="list-style-type: none"> o May indirectly result in energy savings where dredging activities are reduced. 		<ul style="list-style-type: none"> o Indirect impacts on special population groups depends on financing mechanism(s) proposed as well as actual impacts on housing supply and costs. 	<ul style="list-style-type: none"> o Erosion control requirements should not in and of themselves affect urban patterns.
<u>Amenities</u>			
<ul style="list-style-type: none"> o Visual amenity benefits of less turbid waters and reduced eroded areas. o Visual amenity benefits of preserving the natural state of the environment. 			

FIGURE 4 - CROSS PLAN LINKAGES

	WATER QUALITY	AIR QUALITY	SOLID WASTE	WATER SUPPLY	SURFACE RUNOFF
WATER QUALITY		(D) Construction & Operation Effects on Air Quality (I) Secondary Growth Effects on Air Quality	(D) Sludge Volume Increases (D) Hazardous Wastes Increases	(D) Increased Process Water Use at treatment facilities (I) Secondary Growth Effects on Supply and Conservation Reuse	(I) Secondary Growth Effects on Surface Runoff Volumes (Increases)
AIR QUALITY	(D) BACT-Effects on Water Quality Compact Growth - reduce septic tank pollution; effects location and need for treatment facilities		Compact Growth - increased potential for resource recovery	BACT-Water use Effects Compact Growth - reduced demand benefits groundwater recharge	Reduced lead on streets from vehicle transportation controls improves Surface Runoff Quality Compact Growth - worsens urban runoff quality; improves rural runoff quality (less impervious surfaces)
SOLID WASTE	Water Quality benefits from standard compliance Leaching effects on groundwater and surface water	(D) Construction & Operation Effects on Air Quality Vehicle Miles of Travel increases (to landfills) may effect Air Quality		No Impact	More landfill sites may increase runoff problems
WATER SUPPLY	Construction of Reservoirs Tributary to Delta will affect Delta Outflow and Bay Water Quality (I) Secondary Growth Effect on Supply, Conservation; Impacts on sewage treatment plant capacities	(I) Secondary Growth Effects on Air Quality	No Impact		No Impact
SURFACE RUNOFF	Water Quality improvements	No Impact	Solids volumes increases from street sweeping, litter control storm system cleaning effects on landfill capacities	No Impact	

D = Direct

I = Indirect

The effects of one plan on another noted here identify the potential effects only. In the overall assessment, many of these effects were found not to be significant, were mitigated or influenced changes in the effected plan to eliminate the effects.

To meet the Federal air quality standard for oxidants, a comprehensive strategy involving source controls, transportation controls, vehicle emission controls and land use controls was developed. During plan integration and cross plan linkage identification, it became clear that all elements of the plan using population and land use and economic data would have to use the same projections to be consistent with the air quality maintenance plan. The major change involved development of a twenty-year project list for sewerage facilities based on compact growth assumptions. That list is included as Appendix J of the Water Quality Management Plan (Chapter III), and indicates the facilities needed to accommodate future population levels (5.4 to 6.1 million in year 2000) in compact development patterns and the timing changes and deletions that would result from different population totals.

The final activity in Level 4 assessment involves assessment of the impacts of compact growth and the overall impacts of the Draft EMP. Compact growth assessment uses the Assessment Checklist as a starting point of identifying potential impacts. Using the low population projections not developed compactly as an alternative, the difference between the impacts of accommodating the region's population in the year 2000 in a compact and non-compact development pattern was estimated. That assessment information will be available as Assessment/Evaluation Technical Memorandum No. 4, AQMP Technical Memorandum 15.

The overall cumulative impacts of the Draft EMP are identified and quantified to the extent possible in Chapter II of Volume I of the Draft EMP. That Chapter, "Putting the Plan in Perspective" identifies the cumulative impacts, both adverse and beneficial, associated with carrying out the Plan.

SUMMARY

The purpose of the Draft Environmental Management Plan is to meet water, air and solid waste standards and objectives without social, economic and environmental effects so significant that the plan could not be carried out. The assessment process identifies the effects of achieving the ends, but also describes the effects of implementing the measures chosen to achieve the ends. Thus, the assessment process explains how facility investments and other public and private resources can be used to achieve water quality, air quality and solid waste goals. The same process also explains how those investments will affect economic, social, fiscal and physical or environmental aspects of the human environment.

The environmental, institutional/financial, economic and social impacts of the policies and actions recommended in each plan (adverse and beneficial) are identified in Volume I of the Draft EMP to aid decision-makers in their consideration of the consequences of their decisions. That impact information appears in summary form and quantified to the extent practicable in the plan recommendation tables. It is also summarized for each chapter in the section, "Benefits and Costs of Plan Recommendations."

This Draft EIR is written to comply with the requirements of the California Environmental Quality Act. The topics addressed are those required by CEQA identified earlier in this document (page 3). The following chapters discuss

the potential significant environmental effects of each management plan and the entire Draft EMP and mitigation of the potentially adverse significant environmental effects.

The assessment process used during the Draft EMP planning process to identify the full range of impacts of carrying out the plan aided the assessment of the significant environmental effects of the plan.

Having identified the full range of impacts during the planning process, the assessment of the significance of the effects on the environment proceeded readily.

THE ENVIRONMENTAL SETTING OF THE REGION

The Draft Environmental Management Plan is a plan for protecting major features of the environment (the region's air and waters) and reducing the drain on natural resources through solid waste and water conservation and reuse programs. Consequently, much of the environmental setting is described in Volume I of the Draft Environmental Management Plan.

THE PHYSICAL ENVIRONMENT

Water Resources

Section C of Chapter III of Volume I of the Draft Environmental Management Plan describes the water resources of the San Francisco Bay Region, the sources of pollutants that affect them, and the seriousness of existing and future water quality problems. Section C of that chapter is incorporated by reference in this Draft EIR.

Section B of Chapter IV of Volume I of the Draft Environmental Management Plan describes the present water use and supply arrangements for the Bay Area. Section C of that same chapter describes water supply problems in the region. Sections B and C of Chapter IV are incorporated by reference in the Draft EIR.

Solid Waste Management

Sections B, C, and D of Chapter V of Volume I of the Draft Environmental Management Plan describe current solid waste management arrangements in the Bay Area, regional problems identified by countywide solid waste management plans and the physical system for handling solid waste. These sections of Chapter V of Volume I are incorporated by reference in this Draft EIR.

Air Resources

Section 4 of Chapter VI of Volume I of the Draft Environmental Management Plan describes the air quality problems, causes and projections of future problems in the San Francisco Bay Region. That section is incorporated by reference in this Draft EIR.

Land and Other Resources Not Previously Covered

The San Francisco Bay region has unique and varied environmental resources. These special areas include open space, park and wilderness lands, historic places and production areas for agriculture, timber, sand and gravel, and geothermal energy resources. Of equal importance are the scenic opportunities afforded in the region, including the broad views of mountains, ridgelands, hilltops and urban landscapes surrounding San Francisco Bay. The San Francisco Bay region's heritage is reflected in its many cultural resources--historic, architectural and archaeological. These resources contribute to an aesthetically diversified environment. They provide educational and scientific opportunities, are an important part of tourism, and contribute to the unique character of the region.

The historical development of the San Francisco Bay Area is described in Mel Scott's San Francisco Bay Area (Berkeley: University of California Press, 1959) and James E. Vance Jr.'s Geography and Urban Evolution of the San Francisco Bay Area (Berkeley: Institute of Governmental Studies, University of California, 1964). Both publications are incorporated by reference in this Draft EIR. Specific historic, architectural and archaeological resources are listed in the California Department of Parks and Recreation publication, California Inventory of Historic Resources (Sacramento: 1976). This inventory is incorporated by reference in this Draft EIR. A more detailed description of the physical geography, natural resources (including maps and species lists), water quality problems and problem assessment is contained in the 1975 Water Quality Control Plan Report, San Francisco Bay Basin (Part 2, Chapters 11, 14 and 15). That report was prepared to comply with Section 303(e) of the Federal Water Pollution Control Act Amendments of 1972 requirements for a basin plan for water quality protection on a segment by segment analysis basis. The environmental setting aspects of the basin plan are pertinent to this planning effort as the boundaries of the planning areas are virtually the same, and Chapters 11, 14 and 15 of Part 2 of the Water Quality Plan Report, San Francisco Bay Basin are incorporated by reference in this Draft EIR.

THE SOCIAL ENVIRONMENT

The social environment of the Bay Area encompasses the people--their homes, their schools, their work, their play--and the means of getting from one to the other. It encompasses the governmental structure by which the people, through their elected representatives, make decisions about growth and development in order to provide essential public services and protect the natural environment.

Central to growth management decisions is the amount and location of developable land. Preliminary figures from ABAG's recent survey of local development policies show that about 260 square miles of land in the Bay Area have been identified by local agencies as potentially developable within the next decade. This compares with about 1,300 square miles now urbanized. These developable lands are areas where local governments are committed to provide services for development and for which there are no environmental constraints because of local or regional policies concerning critical areas, critical resources or environmental hazards.

The People

The San Francisco Bay Area has a population of 4.9 million in 1977. More people live in the Bay Area than do in each of 36 states. The nine counties surrounding the San Francisco Bay cover roughly 6,980 square miles. About 1,300 square miles--roughly one fifth of the region's land--is now urbanized. Ethnic minorities are concentrated in a few communities. The highest percentages of racial and ethnic minorities live in the larger, older cities. Hispanic (or Spanish surname) people are the largest minority in the region, with 12.7% of the population. Nearly 8% are black, and 4.4% are Asian American. American Indian and other minorities comprise 1.3% of the population.

In the next two and a half decades, the region is expected to grow by between 500,000 and 1.2 million people. This would mean a total population of between 5.4 and 6.1 million in the year 2000, with an annual growth rate of 0.5 to 1%. Average household size in the region is declining, from 2.9 persons per household in 1970 to 2.65 persons per household in 1975 and will probably continue to decline.

School age children were 27% of the region's population in 1970, but in the newer, faster growing suburbs, more than 30% were of school age. Children 5 to 19 years old made up less than 20% in older urban centers that are completely built up and declining in population. Some older cities and suburbs are, in fact, closing schools.

Most persons aged 55 to 64 live in 1-and 2-person households and in larger cities. The highest percentages of people 65 and older are found in more dense, older cities, or in the scattered small communities of the north bay. Changes in the composition and distribution of the population call for local governmental decisions about new development so that areas that are growing rapidly can provide the jobs, public services and types of housing that match the age and household characteristics of people moving in.

Housing

ABAG's most recent estimate of housing needs indicates that 440,000 additional units will be needed by 1985--an annual average of 44,000. More than 180,000 of the region's 1.6 million housing units are either substandard or overcrowded or both. The regionwide figure of 11% inadequate housing masks the variation among counties, which ranges from 6.5% to 17.3%. The same patterns of growth that promote rehabilitating the existing housing stock, revitalizing older urban areas, and increasing the housing supply in rapidly growing suburban centers, where jobs supply is increasing, will also help attain air quality standards.

Personal Income

Income varies widely across communities. Upper income families live in small communities or neighborhoods in the foothills that rise from the bay plain. Most families with income below the poverty level live in flatland neighborhoods next to the bay--and in small towns and rural communities in the far northern parts of the region. Among the 93 cities of the Bay Area, median family income is as low as \$4,700 and as high as \$33,000, although, the lowest countywide figure is \$9,670 and the highest is \$13,900.

Jobs

In the bay region there are four Standard Metropolitan Statistical Areas (SMSAs): Alameda, Contra Costa, San Francisco, San Mateo and Marin are in the San Francisco-Oakland SMSA. Santa Clara County is in the San Jose SMSA; Sonoma County is in the Santa Rosa SMSA; and Napa and Solano Counties are in the Vallejo-Fairfield-Napa SMSA.

The Bay Area has a regional economy. Economic choices made in one part of the region have substantial effects in other parts of the region. In the next few years, Santa Clara, San Francisco, Alameda and Contra Costa Counties

are likely to be the job growth leaders in the region. Manufacturing; services; finance, insurance and real estate; and government are expected to be growth sectors in the region's economy. The agriculture and food processing sectors are expected to decline. Four-fifths of the land reserved by local governments for industry in the Bay Area is located in Santa Clara, Contra Costa, Alameda and Solano Counties.

The region's fastest growing basic industry--that is an industry serving markets outside the region--is high technology manufacturing. The high technology manufacturing industry in the Bay Area includes electronics, scientific instruments and space vehicles and is concentrated on the Peninsula and in Santa Clara County.

The San Francisco-Oakland SMSA is projected to receive the bulk of its employment growth in the finance and insurance sector, maintaining its share of nearly 90% of the region's jobs in this sector. However, despite this projected economic growth, unemployment will remain a problem. Unemployment rates are higher and have risen faster in older communities that are growing slowly or losing population. Since 1970, unemployment rates in the San Francisco-Oakland SMSA jumped 100%. When unemployment rates go up, local governments' revenues from retail sales and other sources decline. Instead of competing with expenditures for public assistance, programs to improve the natural environment can provide much-needed jobs.

Transportation

Bay Area residents find it easy to get around. They have 544 miles of freeways--roughly 10% of the State's total, thousands of miles of other streets, roads and highways, and reasonably good public transit--certainly better than in most parts of the State. The region has an estimated 3,100 transit vehicles--BART, cars, streetcars and buses--serving about 250 million riders a year.

Between 1960 and 1970, use of the automobile to and from work increased. There were approximately 1.8 million employed residents in 1970. Of this total 69% drove their cars to work, and another 9% were auto passengers. About 10% of the employed residents used transit, and the rest took taxis, other forms of transportation or walked. Between 1960 and 1970--in every county of the region--more people were finding work in counties outside the one they lived in.

Transportation--mostly moving people to and from work and carrying products--is the largest consumer of energy in the State, accounting for about 44% of energy demand. About 60% of all oil consumed in the State goes for transportation, and almost two-thirds of California's transportation energy is used on the highway.

Decisions on development patterns and mass transit that cut down the number of automobile trips to work not only conserve energy but reinforce housing and air quality objectives.

Governmental Complexity

The San Francisco Bay Area is one of the most governmentally complex of any of the nation's metropolitan areas. As of January 1, 1977, its 4.9 million residents lived in 9 counties, ranging in size from Santa Clara's 1.2 million to Napa's 92,700. An estimated 85% of the region's population lived in the Bay Area's 93 cities, ranging in size from San Francisco's 662,700 to Colma's 510. Forty-nine of the 93 cities have less than 25,000 residents. Together, those 49 cities have less than 10% of the region's total population, and only 11% of the population living in cities.

The region's cities and counties do not provide all local governmental services. Like the rest of California, the Bay Area has a large number of special districts. The region has 205 of the State's 1,122 school districts. More than 400 special districts in the region are concerned with a broad variety of functions ranging from neighborhood street lighting to large scale redevelopment to transit. Roughly one quarter (212) of the Bay Area's 825 special districts have environmental management responsibilities.

In urban centers, cities provide most municipal services--police and fire protection, construction and maintenance of streets, sewers, parks and recreation facilities; building inspection; and many other services and regulatory functions. But not all cities provide the same mix and level of services. What are basic or fundamental "city" services has never been determined. Counties provide many municipal services through special service areas. Independent special districts may provide still other municipal services. An important distinction between cities and counties is that counties--but not cities--are responsible for health and welfare services required by the Federal and State governments. However, development of social elements in general plans is beginning to appear on the agenda in a growing number of cities.

In addition to local agencies, there are a score of agencies with sub-regional (portions of 2 or more counties) and regional jurisdictions in the Bay Area. Some of these are service delivery agencies, others are planning agencies, and others perform regulatory functions. Some have combined functions. In addition to ABAG, these agencies include:

- Bay Area Air Pollution Control District
- The California Coastal Commission
- East Bay Municipal Utility District
- East Bay Regional Park District
- Emergency Medical Services Regions (2)
- Health Systems Agencies (3)
- Midpeninsula Open Space District
- Metropolitan Transportation Commission
- North Marin County Water District
- Regional Water Quality Control Board (4)
- San Francisco Bay Conservation and Development Commission
- Valley Community Services District
- Wastewater Solids Study Agency
- Yolo-Solano Air Pollution Control District

Fiscal Resources

Financing the Bay Area's governmental system takes money--lots of it. In fiscal year 1975-76, cities and counties in the Bay Area raised or received a total of \$2.6 billion in revenue to support local public services. Special districts (except for schools) in 1975-76 received \$928 million from enterprise activities such as sales of water and electricity, transit fares, and sewerage treatment charges, and \$205 million from non-enterprise activities.

City and county governments rely on revenues from 7 general sources: taxes, licenses and permits, fines and penalties, income from investment, revenues from other agencies, current service charges, and other revenue. More than one-third of all city and county revenues are derived from the property tax. The region's non-school special districts received nearly half of all non-enterprise revenues from the property tax.

There are significant differences in the revenue base of cities and counties in the Bay Area. The cities derive 28% of their total revenue from the property tax, including State property tax relief payments authorized by the Property Tax Relief Act of 1972 (SB 90). County governments depend on the property tax for more than 40% of their revenue.

Local sales taxes, an important source of revenues for cities, contributed almost 16% of total municipal revenue. Sales tax accounted for only 2% of total county revenue and 6% of San Francisco revenue.

Although revenue from other agencies (e.g., Federal grants, State subventions) is the largest single source of general purpose local government funds, the region's counties are much more dependent on this source than its cities. City governments receive less than 30% of their total revenue from other agencies, while 43% of counties' total revenue comes from this source. However, much of this difference is the result of partial State and Federal assumption of mandated county program costs such as welfare expenditures.

Revenues and assessed valuation per capita vary widely among counties and among cities within counties. Total revenues per capita in the eight counties other than San Francisco vary from \$218 to \$300. San Francisco's figure of \$753 per capita cannot be compared with the others because property tax revenues include both city and county tax levies.

In each of the eight counties some cities have per capita revenues that are far higher than those of the county and neighboring cities. In all cases these are cities with major industrial, commercial and high cost residential development.

Assessed valuation per capita in the counties ranges from \$2,777 to \$4,749. ABAG's local development policies survey shows that some areas do not have very much land that is--or can be--committed to new development. These jurisdictions can anticipate very little new development that might be a source of additional revenue.

IMPACTS OF THE WATER QUALITY MANAGEMENT PLAN

DESCRIPTION OF THE PROPOSED PROJECT

Twelve policies are proposed to improve water quality and meet applicable Federal and State standards and objectives. Each policy includes a series of actions to carry out the policies. A complete description of the recommendations appears in Chapter III of Volume I of the Draft EMP and on the Plan Recommendation tables on pages III-47 through III-106. The 12 policies are:

- Policy 1 - Improve understanding of Bay system and the fate and effects of pollutants entering it
- Policy 2 - Establish continuing planning process for Water Quality Management
- Policy 3 - Re-establish recreational and commercial shellfish harvesting in the bay
- Policy 4 - Ensure that water pollution control facilities or measures effectively protect water quality
- Policy 5 - Provide facilities needed for municipal sewerage service and water quality protection
- Policy 6 - Encourage consolidation of treatment facilities and discharge of wastewater to well-mixed areas of the receiving waters
- Policy 7 - Accelerate programs toward reclamation and reuse of wastewaters
- Policy 8 - Establish a program for surface runoff controls that emphasizes low cost measures to reduce the pollutant load from this source
- Policy 9 - Provide facilities needed for industrial wastewater treatment and disposal and water quality protection
- Policy 10 - Improve wastewater disposal practices in unsewered areas consistent with regionwide development policies
- Policy 11 - Monitor effectiveness of existing arrangements for preventing and cleaning up oil and chemical spills
- Policy 12 - Reduce sewage pollution from small boats in marinas, harbors and environmentally sensitive areas

THE SIGNIFICANT ENVIRONMENTAL EFFECTS OF THE PROPOSED PROJECT

The Plan Recommendation tables in Chapter III of Volume I of the Draft EMP (pages III-47 through III-106) contain summary statements about the potential environmental, institutional/financial, economic and social impacts of the actions recommended to carry out the twelve policies for water quality management. Section G titled "Benefits and Costs of Plan Recommendations" in Chapter III summarizes the significant impacts.

As required by NEPA and CEQA, this discussion assesses the significant environmental effects of the Water Quality Management Plan. The significant environmental effects are:

- o improved water quality
- o fish, shellfish, flora and fauna, recreation and visual amenity benefits
- o increased production of sewage solids

For the purposes of the Draft EIR, the policies of the Water Quality Management Plan are classified into two types of recommendations:

- o management planning recommendations
- o facility construction recommendations

The first type, management planning recommendations, includes research, monitoring, criteria and standard development, permit issuance, operation and maintenance activities, public education and information, and continuing integrated water quality management planning. Recommendations of this type are: Policy 1, Policy 2, Policy 3, Policy 4, Action 5.2 and 5.3, Policy 6, Policy 8, Action 9.2 and 9.4, Action 10.1, 10.2, 10.3, 10.5 and 10.6, Policy 11, Action 12.1, 12.2, 12.3 and 12.6.

The significant environmental effects of these recommendations are improvements in water quality expected to result from improved information and its use in decision-making by agencies involved in protection of the quality of surface and groundwater supplies in the region. Indirect water quality benefits should also result from improvements in the efficiency and effectiveness of water quality management programs after consolidation and coordination of activities currently dispersed among a large number of agencies. Other significant environmental effects of management planning recommendations include: the benefits for other aspects of the natural/physical environment associated with the water quality benefits; and, increased knowledge about the environmental responses to pollutants. The affected aspects of the natural/physical environment encompass: fish, shellfish and other aquatic organisms, flora and fauna (species and habitats), recreation potential and use and visual amenities.

The second type of recommendation would ultimately result in construction of treatment facilities (e.g. municipal and industrial treatment facilities, marina pumpout facilities). Recommendations of this type are Action 5.1, Policy 7, Action 9.1 and 9.3, Action 10.4, Action 12.4 and 12.5

These recommendations will have significant environmental effects as they are carried out by local governments and the private sector. Federal and State standards and objectives govern the treatment levels and actions required prior to effluent discharge. Those requirements are based on protection of public health and the natural/physical environment. The major significant environmental effect is therefore the water quality improvements associated with implementing these recommendations. Improved water quality benefits other aspects of the natural/physical environment such as fish, shellfish and other aquatic organisms, flora and fauna (species and habitats), recreation potential and use, and visual amenities.

Another significant environmental effect is the production of sewage solids (sludge) associated with treatment of municipal and industrial wastes. Increased volumes of sludge will result from upgrading and expanding existing treatment facilities, providing new treatment facilities and reclamation activities.

Construction of treatment facilities has other tangible effects. Table 1 lists the EIR/EIS documents prepared (or in preparation) by EPA for the major wastewater management areas of the region. The 20-year Project List (Appendix J of Chapter III of Volume I of the Draft EMP) includes many proposed facilities already discussed in those environmental documents. Proposed projects involve upgrading treatment levels, additions or expansions or reclamation studies at the existing facilities. The EIR/EIS documents listed discuss the environmental effects of construction of the sewerage treatment facility per se. The reader is referred to those environmental documents for the impacts of the construction of the sewerage treatment facilities recommended in the facilities plans prepared for those management areas. As the actions recommended are carried out by local governments and private industry and become site specific project proposals, those agencies will become Lead Agencies under the definitions of CEQA. As Federal grantees, they would be subject to NEPA requirements. The site specific environmental effects of the proposed projects would then be assessed as required by Federal and State laws.

The Water Quality Control Plan Report for San Francisco Bay Basin (Basin Plan) prepared in 1975 by the State Water Resources Control Board and the Regional Water Quality Control Board of the San Francisco Bay Region recommended a comprehensive water quality management plan for the San Francisco Bay Basin. Volume 2 of the Basin Plan contains an assessment of recommended facilities, control measures and alternatives. That information is incorporated by reference in this assessment effort. As the objectives of policies recommended for water quality management are premised on water quality standards and objectives, the recommendations of this plan build on and supplement the information and recommendations of the Basin Plan. As such, many of the environmental effects identified in the Basin Plan are pertinent to an understanding of the water quality effects of recommendations in the Draft EMP.

The Construction Grants for Wastewater Treatment Works Program and the California Clean Water Grants Program fund construction of municipal wastewater

TABLE 1

ENVIRONMENTAL IMPACT STATEMENTS PREPARED BY THE
ENVIRONMENTAL PROTECTION AGENCY

Bay Area Sludge Study Project #1225 (pending)

Central Contra Costa County Wastewater Management Program, State 5B Enlargements Water Pollution Control and Resource Recovery Facilities, prepared with Central Contra Costa Sanitary District Draft Only August, 1976, Project #1000

East Bay Dischargers Authority Water Quality Management Program Phase I Project Draft December 1975 Final July, 1976 Project #0868

Eastern Contra Costa County Wastewater Management Plan Acute Impact of Discharge at Alternative Outfall Location, prepared with East Central Contra Costa County Agency Wastewater Management Agency, with technical assistance, Arthur D. Little, Thomas Reid Draft April, 1976, Final June, 1976, Project #10002

Eastern Marin-Southern Sonoma Wastewater Management Plan prepared with Novato Sanitary District on behalf of Eastern Marin and Southern Sonoma Wastewater Agencies with technical assistance by J.B. Gilbert and Associates, November 1977, Project #1058

Livermore Amador Valley Wastewater Management Program prepared with Livermore Amador Valley Water Management Agency, with technical assistance by URS Research, Co., John Carollo Engineers, Draft January, 1976, Final August 1976, Project #1031

San Francisco Wastewater Master Plan prepared with City and County of San Francisco Draft February, 1974 Final May 1974, Project #0740

South Bay Dischargers Project #1135 (pending)

Western Contra Costa County Wastewater Management Program plus Amendment to the final EIR/EIS West County Agency Wastewater Management Program Wet Weather Flow Treatment and Regional Sludge Handling and Plant Rehabilitation Draft, February, 1976 Final January, 1977 Project #1154

treatment facilities. Proposed projects that subsequently qualify for Federal funding move through a three step process. The Step 1 grant funds the preparation of a facilities plan. Federal regulations require all grantees to prepare an environmental assessment (in California an EIR may be prepared and U.S. Environmental Protection Agency would then prepare an EIR/EIS or Negative Declaration) as a part of the facilities planning process. Step 2 grants fund detailed design and specifications while Step 3 grants fund the actual facility construction. EPA files an EIR/EIS or Negative Declaration prior to award of a Step 3 grant.

ANY SIGNIFICANT ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED IF THE PROPOSAL IS IMPLEMENTED AND MITIGATION MEASURES PROPOSED TO MINIMIZE THE SIGNIFICANT EFFECTS

Construction Effects

Construction of sewerage treatment facilities may have significant (adverse) environmental effects of a short-term, localized nature. These include the dust, surface runoff, noise and energy use related effects associated with construction activities. Other effects may include the alteration of land (and in some cases changes in land use) and visual impacts associated with providing new or expanded facilities. These effects can be minimized by noise and dust abatement measures, careful engineering design, and siting measures. The recommendations for surface runoff control measures at construction sites (Action 8.9 - Control Erosion) would minimize any construction-related adverse effects of surface runoff.

Sewage Solids Generation

The major potentially significant (adverse) environmental effect of the sewerage treatment facilities recommended in the Water Quality Management Plan (municipal and industrial) is the increase in sewage solids volumes. Upgrading primary treatment plants to secondary treatment results in a two-fold increase in the solids produced. Expansion of facility capacity and reclamation of wastewater also results in an increase in solids produced. It is estimated that by 1980 the wastewater treatment agencies in the region will generate about 2500 cubic yards per day of wet (80% moisture content) sludge cake. That amount would cover a football field about 2' high every day.

The sludge management system includes sludge process, transport and disposal or use. With the exception of thermal and combustion processes, the environmental effects of processing are not normally significant. The potential for significant environmental effects is associated with the transport and disposal/use components of the system.

The significant (adverse) environmental effects of those components of the sludge management system include: the potential for water quality impacts (e.g. surface runoff, groundwater contamination associated with landfilling and land application), air quality impacts (e.g. odor, transport truck emissions), and physical resource impacts (e.g. the effects on the supply

and use of land associated with landfill disposal and land application) and energy impacts (truck and pipeline transport).

The San Francisco Bay Region Wastewater Solids Study is developing a regional plan for long-term wastewater solids management and detailed facilities plans for the four largest wastewater treatment agencies (City and County of San Francisco, City of San Jose, Central Contra Costa Sanitary District and East Bay Municipal Utility District). This Regional Plan is a component of the solid waste recommendations of the Draft EMP.

The Draft Project Report/EIR/EIS for sludge management for the four major facilities will be written and processed in the spring of 1978. The potential adverse environmental impacts associated with the increased volumes of sewage solids resulting from wastewater treatment recommendations will therefore be mitigated as part of the sewage solids planning process. The facilities plans for the four largest wastewater treatment agencies will be based on the Regional Wastewater Solids Plan recommendations for sludge management, and will include an impact assessment of the site specific effects of sludge management activities at each of the facilities.

All other treatment facility expansions and reclamation studies will address the environmental effects of increases in sludge volumes in the facilities planning process. Sludge management proposals will have to be consistent with the Draft EMP. Environmental documents will be prepared prior to grant awards for design and construction.

Secondary Impacts

Plans to construct sewerage treatment facilities often face opposition on the basis of their growth inducing characteristics and the adverse environmental impacts associated with the induced growth. The major environmental issue associated with induced growth is the deterioration of air quality. The facilities included on the 20-year Project List (Section J of Chapter III of Volume I of the Draft EMP) and the actions recommended for on-site disposal management would accommodate growth planned for in the region. The 20-year Project List would provide needed facilities to accommodate a population of up to 6.1 million people in the year 2000 in a compact development pattern. The list was prepared using the Series 3 projections, high population estimates.⁴ The recommendations for compact development in the air quality plan would change the timing of several projects on the list. Those projects are identified on page VIII-4 of Volume I of the Draft EMP. Projects whose timing would be affected if the region's population were 5.4 million in the year 2000 are identified with one asterisk in Section J of Chapter III of Volume I. Those which would be deleted from the list altogether are identified with two asterisks. The 20-year project list will be updated annually. That will allow further examination of the need for facility expansions to affect compact development. It will also allow the incorporation of future growth trends into identification of needed facilities.

Because the compact development recommendations of the air quality plan were used to develop a project list and because future Federal and State financial assistance for construction of facilities will only be available to projects on the list, the effect is to reduce the potential for deterioration of air quality resulting from induced growth. Instead,

development will be accommodated, in areas where growth has been planned, through actions in the air quality and water quality plans. Adverse environmental effects of the accommodated development could be mitigated by actions of the affected local governments (e.g. zoning, capital improvements budgets) and by the actions of regional, State and Federal agencies responsible for meeting air and water quality standards and objectives.

The collection systems included on the 20-year Project List have not been assessed to determine their compatibility with compact development or the impacts of providing central sewerage facilities in areas that are currently unsewered. Under current regulations,* sewage collection systems are only eligible for Federal assistance through the Construction Grants for Wastewater Treatment Works Program in "communities in existence on October 18, 1972 and if there is sufficient existing or planned capacity to adequately treat such collected sewage and the bulk of the flow design capacity through the sewer system will be wastewater originating from the community in existence on October 18, 1972."* Replacement or major rehabilitation of existing systems (based on a sewer system evaluation)" must be cost effective and result in a sewer system design capacity equivalent only to that of the existing system plus a reasonable amount for future growth." The collection systems will be subject to close scrutiny in the continuing environmental management planning process and annual update of the 20-year Project List.

ALTERNATIVES TO THE PROPOSED ACTION

The No Action Alternative to the Water Quality Management Plan

The major alternative to the Water Quality Management Plan in its entirety is one of no action. The impacts identified in Plan Recommendation tables in Chapter III pages III-47 through III-106 were measured against that alternative. The no action alternative was not felt to be feasible for several reasons. Section 208 of the Federal Water Pollution Control Act Amendments of 1972 requires "gubernatorial designation of areas with substantial water quality problems and a single representative organization capable of developing effective areawide waste treatment management plans for such area"** and within "a year of designation that a continuing area-wide waste treatment management planning process consistent with Section 201 of the Act"*** be in operation. As the designated organization for the San Francisco Bay Region, ABAG is obligated to establish a process and "produce an areawide waste treatment management plan not later than two years after the planning process is in operation"****

*Section 35.92513 Final Construction Grants Regulations 40CFR, Part 35, Subpart E.

**Section 208 (a) (2)

***Section 208 (b) (1)

****Section 208 (b) (1)

The No Action Alternative for Municipal Facilities and Industrial Discharges

The Basin Plan referenced earlier and facilities plans prepared for subareas of the region and individual treatment works have addressed, for the most part, only point sources of pollution and generally municipal facilities. Section 208 (b) (A)-(D) requires the areawide waste treatment management plan to identify "treatment works necessary to meet anticipated municipal and industrial waste treatment needs of the area over a twenty-year period." The no action alternative to the municipal and industrial waste treatment management recommendations (Policy 5 and Policy 9) is not feasible on two counts. First, such recommendations are required by law. Existing municipal and industrial discharges must meet applicable water quality standards through treatment levels for effluent discharge required by the National Pollutant Discharge Elimination System permits issued by the Regional Water Quality Control Board. Second, facility recommendations for the twenty-year planning period are also required by the Act. No action would not provide for growth and would result in violations of water quality standards by existing point sources as their capacities are exceeded.

The No Action Alternative for Miscellaneous Sources

Designation of an area as having substantial water quality problems is generally based on a situation where waters in the area would not meet applicable water quality standards even with high levels of treatment of wastes at point sources of pollution. This situation generally results from pollutants entering those waters from non-point sources of pollution (e.g. Vessel wastes, surface runoff).

The Basin Plan discussed several non-point sources of pollution that contributed to designation of the Bay Area as an area with substantial water quality problems. Those included urban runoff, construction related runoff, agricultural runoff, salt intrusion and control, oil spills, dredged spoil, solid waste disposal and floating debris. The Basin Plan discussed general approaches to manage these sources of pollutant loadings to the Bay system.

Section C ("Water Pollution Problems and Their Causes") of Chapter III in Volume I of the Draft EMP describes the nature and seriousness of existing and future water quality problems in the San Francisco Bay system. Included in that description are miscellaneous sources of pollution (non-point sources). The major sources (surface runoff, on-site disposal systems and oil and chemical spills and vessel wastes) are addressed by recommended management actions (Policy 8, Policy 10, 11 and 12 respectively). The no action alternatives to non-point source recommendations is not feasible. Section 208 (b) (2) (F)-(K) requires these sources to be addressed. No action with respect to these miscellaneous sources would result in the worsening of water quality problems associated with such sources. This Draft EMP goes beyond the Basin Plan and recommends specific actions to manage non-point sources of pollution.

Institutional Alternatives to Implement the Water Quality Management Plan

An alternative that could have been recommended throughout the Water Quality Management Plan was the creation of new agencies or a "super" regulatory agency to implement the recommended actions. Section 208 (c) (2) (A) requires that there be adequate authority "to carry out appropriate portions of an areawide waste treatment management plan..." The regulatory program developed must indicate that agency(s) with regulatory responsibility possess the statutory authority, or have initiated legislative proposals to obtain the authority to carry out the activity and use the forms of regulation called for in the plan (Section 208 (b) (2) (C)). Thus, the option was feasible.

The EMTF Plan Implementation Committee directed ABAG staff with regard to institutional arrangements for plan implementation. Chapter IX of Volume I of the Draft FMP describes the "guiding principles" developed by that committee. The committee (and EMTF endorsement for the draft plan) indicated that successful initial implementation of the plan required the use of existing agencies with implementing authorities where those agencies could reasonably be presumed able to effectively implement proposed actions. The implementing authorities for plan recommendations are distributed among many agencies in the region. Past efforts have shown that cooperative agreements (e.g. Joint Powers Authorities, Memoranda of Understanding) are effective means of implementation. Those guiding principles ruled out changes in institutional structures such as creation of new agencies or a "super" regulatory agency.

In addition to the no action alternative to the Water Qaulity Management Plan in its entirety and to the three elements (municipal facilities, miscellaneous sources and industrial discharges) discussed, alternatives to specific policies and actions were also considered.

Alternatives to Policy 1

The alternative considered for Policy 1 (Improve understanding of Bay System and the fate and effects of pollutants entering it) and its implementing actions was no action or continuation of the status quo. Numerous agencies (Regional Water Quality Control Board, State and County Health Departments, Federal agencies, local agencies, special districts, private industry) currently conduct research and monitoring programs. However, due to limited resources, the programs are not as extensive as would be desirable. One major problem associated with the current data gathering effort is that of information transfer. The data that does exist is not well circulated or easily accessible in a uniform format. Because much of the research data is inconclusive or of questionable value and several of the water quality management recommendations call for new monitoring and research, the no action alternative did not seem feasible. An independent, centralized research and monitoring program was recommended to obviate long delays in assembling an adequate data base for ongoing water quality management planning and to improve the reliability and accessibility of the data generated.

Alternatives to Policy 2

The no action alternative for Policy 2 (Establish a continuing planning process for water quality management) is not feasible. Section 208 (b) (1) and (3) requires the establishment of such a process and annual updating of the areawide waste treatment management plan.

Alternatives to Policy 3

The alternative considered for Policy 3 (Re-establish recreational and commercial shellfish harvesting in the Bay) was no action or continuation of the status quo. Beds of mussels, oysters and clams are widespread in the Bay system. However, they remain an untapped resource due in large part to the presence of pathogenic bacteria and viruses in overlying waters. Continuation of the status quo would not change the current situation. The shellfish resource would remain untapped and inaccessible to the Bay Area population. As the discharge of substances that contaminate shellfish are prevented or reduced, the potential to realize the benefits of the resource is greatly improved. No action does not appear reasonable in light of the actions and investments taken to improve water quality. There are no viable alternative approaches to re-establishing shellfish harvesting. Beds closed to recreational and commercial harvesting are closed due to the potential health hazards of harvesting contaminated shellfish. Before the beds could be open to recreational harvesting, surveys by the State Department of Health would be mandatory. Commercial harvesting requires better information on the effectiveness of depuration and relaying as methods of ridding shellfish of contaminants. The State Health Department is the agency with expertise and authority to take such actions.

Alternatives to Policy 4

The alternative to policy 4 (Ensure that water pollution control facilities or measures effectively protect water quality) was no action or continuation of the status quo. The municipal and industrial treatment facilities construction program has involved substantial amounts of capital investment. As the program of construction tapers off, it will be necessary to concentrate efforts on the operational aspects of those facilities. A monitoring effort would provide data on aspects of plant operation needing attention. Information about treatment plant operator training programs is currently not readily accessible. The no action alternative would allow this situation to continue. Billions of dollars of capital investment will be poorly spent if plants are not properly operated. Information provided to plant operators about refresher courses, new training and retraining programs and more and better programs per se would reduce the likelihood of a major cause of plant upset-operator error. The no action alternative would not ensure that capital investments in facility construction would return the water quality benefits expected from the construction.

Alternatives to Policy 5 and Policy 9

An alternative considered for Policy 5 (Provide facilities needed for municipal sewerage services and water quality protection) and Policy 9 (Provide facilities needed for industrial wastewater treatment and disposal and water quality protection) was to require toxicant removal prior to discharge of effluents to municipal systems or directly to the Bay system. The

effects of substances such as toxicants can upset treatment process operation and damage aquatic life in the receiving waters. Detection and source control of toxic materials discharged to subregional sewer systems is a difficult and expensive problem. Reduction of toxicant emissions at the source requires the cooperation of industrial operators with processes or control procedures that may contribute these substances to the sewer system or receiving waters. Local and subregional waste ordinances and National Pollutant Discharge Elimination System (NPDES) permits currently require that certain actions be taken to treat toxic substances prior to discharge. Removal of toxic substances from waste discharges (and storm runoff) is difficult and expensive. Despite data from fish bioassay, effluent chemical analysis, and receiving water and Bay monitoring, conclusive evidence is lacking regarding the harm of such discharges to the biological system of the Bay. In light of this situation, it was not judged feasible to recommend toxicant removal at all treatment facilities. Instead, it is recommended that the current efforts continue and a reduction in the discharge of toxic substances be accomplished where this can be done easily and relatively inexpensively. At the same time, research would be undertaken to determine whether harmful effects are occurring and if further removals are justified.

Alternatives to Policy 7

Alternatives to Wastewater Reclamation and Reuse are described as part of the Water Supply Management plan alternatives.

Alternatives to Policy 8

The alternatives to the surface runoff management recommendations (Policy 8 - Establish a program for surface runoff controls that emphasizes low cost measures to reduce the pollutant load from this source) were considered by each of the counties in the process of developing the individual County Surface Runoff Control Plans. The criteria used to eliminate alternatives or control measures is described in some detail in each county plan. The County Surface Runoff Control Plans will be available as an Appendix to the Draft EMP. Generally speaking, the alternative to an emphasis on low cost measures for reducing the pollutant load from surface runoff would have been to recommend new programs or structural approaches. Alternatives of that nature were rejected for the most part because the concept of Best Management Practice stressed by EPA involves an initial focus on better housekeeping methods and a reorientation of current programs to include water quality benefits as an additional criteria. The effectiveness of this approach will be studied and specific demonstration projects carried out to gather further information about the effectiveness of controls. Alternative approaches will be investigated in the continuing planning process.

Alternatives to Policy 10

The major alternative considered for Policy 10 (Improve wastewater disposal practices in unsewered areas consistent with regionwide development policies) was that of no action or continuing the status quo. Because problems associated with failing septic tanks occur throughout the Bay Area under the existing system, continuation of the status quo or no action was not felt to be feasible if the problem is to be alleviated.

An alternative to Action 10.1 (Establish minimum regionwide standards for on-site disposal systems) would have been to recommend that the Regional Water Quality Control Board set standards and impose those standards on the county health departments. The county health departments currently permit on-site disposal systems. The problem appeared to rest with lack of uniform standards and application of standards. A cooperative approach to standard setting appeared to be the more effective alternative.

No action did not appear to be a feasible alternative to Action 10.2 (Establish public management of new on-site systems where such systems are technically appropriate and meet all other EMP requirements). Historically many system failures have been linked to poor maintenance, due to the discretion allowed the homeowner and the lack of information about the consequences of poor maintenance. A public oversight role appeared to be an appropriate solution. An alternative would have been to recommend the creation of a new agency to implement public management of new on-site systems. Based on the EMTF approach not to recommend the creation of new agencies where current implementing authorities exist and can reasonably be assumed able to carry out the recommended action, that alternative was rejected.

The same reasoning occurred with respect to the recommended implementing agency for Action 10.3 (Permit public management of existing on site systems). Another alternative for that action would have been to require public management of existing on-site systems. Since failures are not always the result of poor maintenance (but may instead be due to improper soil conditions etc.), requiring public management may be inappropriate in many areas as it would not solve those problems. Requiring public management of existing systems when the problem is that the systems are not technically appropriate would allow the health hazards of recurrent failures to continue instead of allowing the area to plan for a central sewerage system as recommended in Action 10.4 (Where on-site systems are inappropriate, install sewerage system).

Alternatives to Policy 11

The alternative considered for Policy 11 (Monitor effectiveness of existing arrangements for preventing and dealing with oil and chemical spills) was no action or continuation of the status quo. Numerous agencies are currently involved in dealing with spills (Coast Guard, Department of Fish and Game, EPA, RWQCB, State and County Offices of Emergency Services, Fire Department and local contractors). However, each of those agencies concentrates on a circumscribed area of concern. Sharing of collected data is inadequate. Coordinated preventive efforts are not the norm although clean up efforts are often well coordinated. No action would allow this situation to continue. A more feasible alternative appeared to be selection of one agency that would effectively monitor and coordinate spill prevention and clean-up programs. This would develop information about problems in the program needing attention and correction.

Regulation of the construction and operation of vessels, facilities and safety device installation and increased liability limits would effectively reduce the risk of accidental oil and chemical spills. Such actions would provide incentives to shippers and facility owners to install effective safety devices and provide operator training to counter spills resulting from operator error. These actions appeared more feasible than

the status quo or the risk of spills. Federal law preempts State or regional vessel construction and operation regulations and thus our recommendations can only support Federal efforts.

No action did not appear feasible with regard to the current shipping traffic situation in San Pablo Bay and Carquinez Straits. Shipping traffic in those areas is substantial. The risk of accidents remains due to the lack of a traffic system. Investigation of extending the comprehensive Central Bay radar traffic system seems advisable.

Alternatives to Policy 12

Several alternatives were considered for the vessel waste management recommendations (Policy 12 - Reduce sewage pollution from small boats in marinas, harbors, and environmentally sensitive areas). An alternative considered for Action 12.1 (Improve monitoring and documentation of vessel waste pollution) was to have responsibility for monitoring rest with marina owners who would report results to the Regional Water Quality Control Board (RWQCB). That alternative, upon further investigation, was judged not feasible. The authority that would have been used was the RWQCB waste discharge permit authority. However, legally and technically the marina is not the point of discharge. The boats in the marina are the discharge "points". The legal issue and the potential complexity of such an approach resulted in a decision to recommend that the monitoring for this program be conducted by the San Francisco Bay Delta Research Program (SFBDRP). The choice of SFBDRP rather than the RWQCB was based on two considerations. One, it did not seem likely that the staff resources of the RWQCB were such to allow it to assume responsibility for any extensive marina and harbor monitoring program. Two, an extensive program is necessary, it should be coordinated with other Bay Monitoring, and should be done in the immediate future if real progress is to be made in re-opening shellfish beds for recreational and commercial shellfishing.

An alternative to Action 12.2 (Establish no-discharge zones within Bay Area) would have been to recommend that the entire Bay be declared a no discharge zone. Large portions of the Bay are not as sensitive to waste discharges as specific beneficial use areas such as shellfish beds and water contact recreation areas. Pending analysis of the water quality effects of new no discharge zones in the recommended areas, it did not seem reasonable to require potentially unnecessary and extremely costly actions by point source dischargers to eliminate all discharges to the Bay.

An alternative to Action 12.3 (Inform boating public of marine sanitation devices) was to recommend a Bay Area specific marine sanitation device program. That program, as initially conceived, would have involved requiring all boats to install Bay Area approved marine sanitation devices (MSD). Operated through an inspection program administered by the Department of Motor Vehicles, DMV would require the boat owner to show a certificate from an inspection station that there was an approved MSD on the boat. This would occur as part of the boat registration/license program. The inspection station options were boat dealerships, repair shops, marinas or county health departments. Licensing of the inspection station and identifying Bay Area approved MSD would be handled by the State Health Department through the county health departments. Authority to regulate MSD would be delegated by

the U.S. Coast Guard. Analysis of the legality of such a program indicated that the State would be pre-empted from undertaking such a program because the statutory authority to regulate rests with the Federal government (U.S. Coast Guard). Further analysis of the institutional complexities of such an approach also influenced the decision not to pursue that alternative. Instead, a public education program was recommended as an effective way to inform the boating public about required devices and the importance of controlling vessel discharges.

RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF MAN'S ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

The recommendations of the Water Quality Management Plan are an attempt to initiate a program of actions to be taken by all levels of government and the private sector that would result in the maintenance and enhancement of long-term productivity of the region's water resources. In some cases, for example, the municipal, industrial and certain of the miscellaneous source management actions would result in the short-term use of available materials to achieve long-term productivity. As the actions are implemented and become site-specific proposals, the project level assessments required by NEPA and CEQA will identify the relationship between short-term uses of the environment and the maintenance and enhancement of long-term productivity. The maintenance and enhancement of long-term productivity is associated with enhancement and protection of the beneficial use potential of the region's streams, lakes and reservoirs and the Bay (e.g., water contact and non-contact recreation, fishing, shellfishing, etc.).

ANY SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL CHANGES WHICH WOULD BE INVOLVED IN THE PROPOSED ACTION SHOULD IT BE IMPLEMENTED

Policies which would ultimately result in construction (Action 5.4, Action 9.1 and 9.3, Action 10.4, Action 12.4 and 12.5) of treatment facilities would require material and land resources. The land where the facilities will be sited may undergo irreversible environmental changes. The specific sites where that will occur and the exact nature of the irreversible environmental change from construction of the project and due to the growth accommodated by the project will be identified during the planning and assessment for the specific project.

THE GROWTH INDUCING IMPACTS OF THE PROPOSED ACTIONS

The recommendations in the plan most susceptible to scrutiny for their growth inducing potential are the municipal facilities policy (Policy 5) and actions and the on-site disposal system management policy (Policy 10) and actions. Comments received on the October draft of the Water Quality Management Plan raised concerns that the recommendations for public management of new on-site disposal systems would be construed as a growth inducing action and would adversely effect local government efforts to control growth on lands outside urban service areas.

As a result of those comments, the policy was modified. The new policy, Policy 10, reads "Improve Wastewater Disposal Practices in Unsewered Areas Consistent with Regionwide Development Policies." The actions recommended to carry out that policy seek to do several things. First, uniform standards and criteria would be developed. That would ensure that new on-site disposal systems (septic tanks) would only be permitted where it could be demonstrated that they are technically feasible and could be presumed to function effectively, with proper maintenance, without degradation of the ground or surface water. Use of uniform standards, criteria and tests by each county health department would eliminate the current situation where, because of different criteria, permits may be issued in one county under circumstances that would result in denial in another county. Assuming that new, uniform standards and criteria would be more stringent than many current ones, rather than inducing development, the effect could be the opposite. Development proposals would still have to pass the test of consistency with regionwide development policies. Public management of new on-site disposal systems merely ensures that if on-site systems are permitted because they are technically appropriate, and are consistent with regionwide development policies, they would not fail due to lack of proper maintenance. It is therefore felt that Policy 10 would not have growth inducing effects.

Policy 5 (Provide facilities needed for municipal sewerage services and water quality protection) and the actions to carry out the policy embodied on the 20-Year Project List (Appendix J of Chapter III of Volume I of the Draft EMP) are also subject to scrutiny for their growth inducing effects. The projects on the list that involve expansion of existing treatment facilities are those facilities necessary to serve a Bay Area population of 6.1 million people in a compact development pattern in the year 2000. Thus, rather than inducing development, those facilities will be sized and timed so as to accommodate development planned for in the future. Because of the uncertainties about future population levels, projections of future waste loads were also calculated based on the low population projection of 5.4 million people in the year 2000, again in a compact development pattern. The projects on the list that would be deleted from the list or have their timing affected are noted with asterisks. The re-assessment of the 20-year project list was conducted during plan integration to ensure consistency across plans and in particular to ensure that policies of the air and water quality plans were mutually supportive.

To meet and maintain key Federal and State air quality standards, requires a comprehensive strategy of additional technological controls for stationary and mobile sources and transportation and land use controls. Actions to implement the policies are recommended in the Air Quality Maintenance Plan. The recommended transportation and land use management/development controls seek to reduce the amount of vehicle travel and number and length of automobile trips in the region. Central to the strategy is the concept of compact development to slow and ultimately reverse recent trends where the distances between home, work, shopping and other daily activities are increasing, and in so doing causing serious air pollution problems associated with the increased dependence on and use of the automobile.

Provision of sewerage and water is an important component of development decisions. To complement the air quality plan objectives of reducing automobile travel, the timing and capacities of treatment facilities will be keyed to accommodating growth in a compact development pattern consistent with the land use management/development controls recommended in that plan.

As discussed in the section "Significant Environmental Effects Which Cannot Be Avoided if the Proposal is Implemented," the collection sewer systems included in the 20-year project list have not been assessed for consistency with the land use management/development controls recommended in the Air Quality Maintenance Plan. Thus, at this point, it is possible that certain of those systems could induce growth (although the ultimate limiting factor is the capacity of the treatment plant at the end of the pipe--a capacity selected in accordance with planned growth policies). However, as mentioned in that section, during the initial phases of the continuing environmental management planning process those projects will be assessed. In revising the 20-year project list (an annual activity required by Section 208 of the Federal Water Pollution Control Act Amendments), those projects found not to be consistent with the EMP would be deleted from the list.

IMPACTS OF THE WATER SUPPLY MANAGEMENT PLAN

DESCRIPTION OF THE PROPOSED PROJECT

Three policies are proposed to improve water supply management activities in the region. Each policy includes a series of actions to carry out the objectives of the policy. A complete description of the recommendations appears in Chapter IV of Volume I of the Draft EMP and on the Plan Recommendation tables on pages IV-37 through IV-50. The three policies are:

Policy 1 - Provide a safe and reliable water supply to all citizens at a minimum monetary and environmental cost

Policy 2 - Encourage water saving

Policy 3 - Encourage reuse of wastewater where cost-effective.

The water supply management plan represents a step toward optimal use of the water supplies available to the Bay Area. While this initial analysis indicates that efficient use of current supplies would minimize the necessity to build expensive and environmentally costly new sources, the alternative methods of ensuring optimal use require further assessment before tradeoffs among the alternatives can be fully considered in the decision-making process. This plan therefore establishes a mechanism for considering the options possible for a cooperative approach to water supply management in the region.

SIGNIFICANT ENVIRONMENTAL EFFECTS OF THE PROPOSED PROJECT

The Plan Recommendation tables in Chapter IV of Volume I of the Draft EMP (pages IV-37 through IV-50) contain summary statements about the potential environmental, institutional/financial, economic and social impacts of the actions recommended to carry out the three policies for water supply management. Section G titled "Benefits and Costs of Plan Recommendations" in Chapter IV summarizes the significant impacts.

As required by NEPA and CEQA, this discussion assesses the significant environmental effects of the Water Supply Management Plan. The significant environmental effects are:

- o management and protection of existing surface and groundwater supplies
- o beneficial impacts of water conservation and wastewater reclamation on the natural/physical environment.

For the purposes of the Draft EIR, the actions to implement the policies are divided into three types of recommendations:

- o management planning recommendations
- o administrative actions and incentives for water savings
- o supply development and distribution

The first type of action, management planning, includes coordination activities, research, public education, special studies and continuing integrated water supply management planning activities. Actions of this type are Actions 1.1, 1.3, 1.5, 1.6, 1.7, 2.3, 2.5, 2.7, and 3.1. The expected benefits of such recommendations include an improved information base for water supply agencies operating in the Bay Area and development of coordinated and consistent data.

Currently, the interaction among those agencies is minimal and sporadic. The drought of the last two years has highlighted the need for coordination and cooperation and the importance of a regional perspective for planning for water supply and use in the years to come. The benefits of planning together for the region's future water needs include the improved reliability and flexibility of the current and future water supply system and operation of that system, the enhanced ability of agencies to ensure the selection of cost-effective, environmentally sound methods of supply, water conservation and reuse, managing and protection of existing surface water supplies, a workable plan for dealing with future drought conditions, and a comprehensive approach to protection and using the region's groundwater resources.

Another type of recommendation involves actions to affect water savings. Actions of this type include Actions 2.1, 2.2, 2.4, 2.6, 2.8 and 3.2. They involve administrative actions such as code enforcement, revision of water-rate structures and other incentives to ensure implementation of residential, commercial, industrial and agricultural water conservation practices. The expected benefits of these recommendations include the efficient use of existing water supplies, energy savings for various sectors from reduced water use, and the potential to forego costly and environmentally damaging major water supply projects.

Water savings would also result from the reuse of wastewater. Use of reclaimed wastewater for purposes such as industrial cooling, certain crop and forage production and landscaping would result in higher quality water supplies being available to serve more demanding purposes such as potable water supply. Use of reclaimed wastewater for irrigation purposes in parks, golf courses, highway rights-of-way, and agricultural and silviculture would have aesthetic as well as recreational benefits for the region. In addition, reclaimed wastewater may be used for purposes such as marsh enhancement, with resultant benefits for the biological community supported in and by those natural areas.

The third type of recommendation involves supply development and distribution and construction of wastewater reclamation facilities. Actions of this type include Actions 1.2, 1.4 and 3.3. The significant environmental effects of these actions are the environmental effects associated with construction and operation. Supply development and distribution involves dams and reservoirs, aqueducts and associated appurtenances to capture, store and convey water to areas close to population centers for treatment and distribution to the ultimate consumers. There are significant environmental effects associated with each step of supply provision. Environmental effects shared by all of the steps in supply development and distribution include construction impacts such as dust, noise, energy use, land disruption and surface runoff and other water quality effects. A major concern with water supply reservoirs (source or storage) is the alteration of the natural state of the environment-- changing free flowing streams to flat water environments. Alterations to the

natural stream character may also result from construction of the conveyance system as channelization and re-routing of streams is often necessary. Water quality effects may accompany those alterations. The energy required to transport water long distances is another shared significant effect of several steps in supply provision.

Interagency water transfers would generally involve interties between the supply distribution systems of water supply entities. The most notable example is the pipeline across the Richmond-San Rafael bridge, which supplies Metropolitan Water District of Los Angeles water to Marin County residents via the East Bay Municipal Utility District's system. Interties similar to that would not have significant environmental effects. Many other interties currently exist or could be affected by minor connection projects. Further major interties may have significant environmental effects associated with their construction. However, at the time that such additional interties are proposed, the implementing water supply agency would be the Lead Agency under the definitions of CEQA and would be responsible for the preparation of a Draft EIR or Negative Declaration. The major significant environmental effect of a system of interties is the potential to forego the development of possibly environmentally damaging major new supplies. That potential is enhanced by an ability to use contingency capacities of all existing water supplies through the system of interties instead of development of independent contingency capacities.

ANY SIGNIFICANT ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED IF THE PROPOSAL IS IMPLEMENTED AND MITIGATION MEASURES PROPOSED TO MINIMIZE THE SIGNIFICANT EFFECTS

The major significant (adverse) environmental effects associated with water supply provision are those associated with the construction of dams.

The adverse effects include:

- o Loss of natural setting and transformation of scenic values
- o Loss of resource value of lands:
 - wildlife habitats and species (diversity, composition, and quantity)
 - agricultural lands
 - forested lands
 - mineral resources
 - recreational opportunity changes
 - sites of historic, cultural and archaeological significance
- o Displacement and/or disruption of resident population and service area population changes
 - changes in development patterns
 - changes in area economic activity
 - changes in composition of population and community character

- o Loss and disruption of free flowing stream environment
 - changes in downstream hydrologic and sediment conditions (water quality effects and flooding effects)
 - potential for downstream erosion and beach erosion due to disruption of littoral transport
 - loss of stream fisheries
 - destruction of plant communities by inundation and changes in downstream riparian community

Many of the same adverse effects are associated with the other components of the supply system (e.g., aqueducts, storage facilities).

The Water Supply Management Plan does not recommend the construction of specific projects and thus site-specific effects cannot be identified at this point. The environmental impacts of separate system interties and other specific alternatives for supply management would be identified during the continuing planning process and by the implementing agencies that would carry out plan recommendations.

Several of the major water supply projects discussed in the plan have had Environmental Impact Statements prepared for them. These include the Warm Springs Dam in Sonoma County and the San Felipe Division of the Central Valley Project. They also include several dams along the American River. An Environmental Impact Report was also prepared for the local aspects of the San Felipe Project. Those water supply facility proposals still in the planning stage would have EIRs prepared as specific alternatives are identified. These projects include the EBMUD aqueduct from an American River storage facility, another conveyance project of the San Francisco Hetch Hetchy Dam (also commonly known as the fourth barrel of Hetch Hetchy), and the North Bay Aqueduct. The impacts that have been documented are public record. Mitigation measures are also identified.

One important outcome of water savings and reuse of reclaimed wastewater would be the ability to re-examine the need for costly and environmentally damaging projects. When placed in the context of information on conservation and reuse, the tradeoffs would be better understood and the ability to choose optimal solutions to future water supply needs would be improved.

Wastewater reclamation facilities will be assessed for their cost-effectiveness and environmental impacts during the facilities planning phase of the Construction Grants Program for Wastewater Treatment Facilities (Section 201 of the Federal Water Pollution Control Act and the California Clean Water Grants Program). The wastewater treatment agency (special districts, cities and counties) would then become a Lead Agency under the definitions of CEQA and subject to NEPA requirements as a Federal grantee. At that point, the agency would prepare an assessment of significant environmental effects as required by Federal and State laws.

A potential significant (adverse) environmental effect of wastewater reclamation is associated with the possibility that the reclaimed wastewater may

contain bacteria, viruses or other substances harmful to public health. Use of reclaimed wastewater is restricted by State Health Department regulations to uses that do not involve human ingestion (e.g. landscape irrigation, industrial cooling and some agricultural production). Reclaimed wastewater could be used for groundwater recharge where groundwater is not used for a drinking water supply. Other uses include marsh enhancement and the creation of artificial lakes. Controlling the use of reclaimed water through research and monitoring would minimize the potential for significant (adverse) environmental effects and health effects.

Another significant (adverse) environmental effect of wastewater reclamation is the amount of sludge created in the treatment process. Those effects are mitigated by the Regional Wastewater Solids Study (Policy 18 of the Solid Waste Management Plan) that recommends a plan for managing the sewage solids created by the region's wastewater treatment facilities. The regional Wastewater Reclamation Study will also address the benefits and adverse effects of a large-scale reclamation effort in the Bay Area.

The other significant (adverse) environmental effects of the water supply management plan are the construction-related impacts outlined earlier--dust, noise, energy use and surface runoff. Those impacts can be mitigated by noise and dust abatement measures, careful engineering design and siting measures, and by the implementing actions recommended in the Water Quality Management Plan for surface runoff control, particularly Action 8.9 - Control Erosion.

ALTERNATIVES TO THE PROPOSED ACTION

The major alternative to the Water Supply Management Plan in its entirety is one of no action. The impacts identified in the Plan Recommendation tables of Chapter IV were measured against that alternative. No action was not felt to be a reasonable alternative.

Developing an integrated environmental management plan requires consideration of air, water and solid waste management. Actions recommended for air quality management will have impacts on water quality and solid waste and water supply. The same is true for solid waste management. Water conservation could reduce the flow of wastewater and affect the design of wastewater treatment facilities. It could also affect projections of future water use. Wastewater reclamation and reuse for groundwater recharge and other purposes affects water quality management decisions and is a logical extension of improving municipal treatment works. Changes in conservation and reuse practices, as well as current drought and groundwater planning gaps, demonstrate the need for regional cooperation in water supply planning.

Institutional Alternatives to Implement the Water Supply Management Plan

An alternative to Action 1.1, which recommends the creation of a Water Management Coordinating Council composed of existing water supply authorities in the region, would have been to recommend a metropolitan water agency. The new agency could be responsible for all aspects of water supply from planning to service delivery. Although an agency of this type would probably be an efficient arrangement, its creation would obviously involve drastic institutional changes that would be extremely controversial and difficult to

accomplish. The approach chosen appeared more promising. Most of the advantages of regional water supply planning can be obtained if cooperation between existing agencies can be improved. Development of a mechanism for cooperative interagency water supply planning could lead to more efficient water use without the necessity for major institutional change. A general policy governing plan development was that no new or "super" agency would be suggested where an existing agency(s) had the appropriate authority and could reasonably be assumed capable of effectively implementing recommended actions. This policy is discussed in Chapter IX of Volume I of the Draft EMP. The EMTF Plan Implementation Committee directed staff in these matters. Thus, although 83 separate agencies currently distribute water from 8 different sources and operate independently with the potential in-efficiencies inherent in such an approach, a metropolitan water agency was not recommended.

Alternatives to Water Savings

Alternatives to the water conservation actions considered the no action alternative in addition to other alternatives. The no action alternative was not considered feasible for several reasons. The current drought has forced an awareness of the finite nature of water availability. Conservation programs have shown dramatic results in reducing water consumption. Other events of the recent past have also contributed to changing values about resources, consumption patterns and the interactions of the social, economic and physical environment. As a result, there is every reason to consider water conservation a viable objective even when the current drought ends.

As discussed in Chapter IV of Volume I of the Draft EMP, the potential savings of moderate and maximum programs of water conservation were analyzed during plan development. The experience of water conservation programs implemented in the Bay Area and elsewhere and the large number of existing dwelling units in the region influenced the decision to recommend a simple, moderate residential conservation program. For existing structures the program relies heavily on occupant installation of devices and a simple means of seeking voluntary cooperation and compliance. The maximum program, in this case, is feasible and viable as it differs only in the effort expended to get the conservation/water savings kits to the consumer. Estimated savings could be from 1.7 gallons per capita per day (assuming 30% use of displacement bottles and 15% use of shower inserts under the moderate program) to 4.1 gpcd (assuming 75% use of bottles and 35% for shower heads under the maximum program.)⁵

A moderate water conservation program for new residential construction could be accommodated as part of initial construction with relative ease. Other devices such as shower flow controls, faucet flow controls, hot water pipe insulation, shower cut-off valves, and pressure regulators to name a few viable options would save considerable amounts of water from in-home water use at low per unit costs of considerably less than \$100. Many alternatives are possible for commercial establishments, industries and public agencies including those mentioned for residential programs. The water savings potential is substantial and the most cost-effective alternative program would be developed for such large volume users on a case by case basis.

Agricultural water conservation presented the opportunity for consideration of several alternatives such as pressurized irrigation systems, leveling of land, and low application rate techniques as well as subalternatives within those alternatives (e.g. portable and semi-portable sprinkler systems, drip irrigation, automated systems). Conservation could also be achieved by night irrigation, alternate middle irrigation, improvements to the distribution systems and reducing water losses. The differences in controlling factors (e.g. terrain, soil type, crops) requires a county by county analysis to determine the "best" alternative.

Residential (existing and new) commercial, industrial, public agency and agricultural measures such as those mentioned were packaged into eight alternative comprehensive conservation programs. Those alternatives appear in detail in an appendix which will be available for public inspection. The two most promising programs were labeled moderate (Plan A) and maximum (Plan B) and are summarized on page IV-18 and on Table 4 in Chapter IV of Volume I of the Draft EMP. Again, for the initial phase of implementation, the moderate plan is recommended for implementation.

Alternatives to Wastewater Reclamation and Reuse

The alternatives for wastewater reclamation and reuse (Policy 3) are no action and alternative uses of reclaimed wastewater namely landscape irrigation, agricultural irrigation and industrial use for cooling purposes. A majority of the sewerage service agencies in the Bay Area have analyzed the potential for reuse of treated wastewater in their service areas. Those meeting certain financial, technical and environmental criteria were considered feasible and included on the 20-Year Project List for further facility planning, assessment and design. The continuing planning process will also investigate the further development of markets for reclaimed wastewater and the regional alternatives for reuse of treated wastewater.

For the purposes of comparison, rough estimates were made of the costs of alternative water supply management program elements. That comparison appears on Table 5 (page IV-24) of Volume I of the Draft EMP and formed a basis for the recommendations in the Water Supply Management Plan.

Regional and Subregional Alternatives

For a discussion of alternatives on a regional and subregional level, the reader is referred to the section titled "The Regional Supply and Demand Situation" (page IV-25 through 32) and especially the New Drought Scenario/ Old Drought Scenario discussion on pages IV-26 through IV-28.

THE RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF MAN'S ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

The recommendations of the water supply management plan are an initial step to implement a program of action to maintain and enhance the existing water available to the region. Water savings and reuse of reclaimed wastewater would result in long-term benefits and, in particular, allowing water for more critical uses such as the potable water supply needs of the future population. Actions taken to protect and manage the region's groundwaters would result in maintaining their viability and function in the physical system.

Short-term uses of available resources/materials would be required for actions such as construction of wastewater reclamation facilities, manufacture of water conservation devices and, especially, the construction of the component parts of the water supply projects. In the latter case, the relationship is described in the environmental documents cited earlier which were prepared for some of the projects. Further discussion of the relationship between short-term uses of the environment and the maintenance and enhancement of long-term productivity have or will be discussed in the environmental documents required for Federal and State financial assistance for construction of wastewater reclamation projects.

ANY SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL CHANGES WHICH WOULD BE INVOLVED IN THE PROPOSED ACTION SHOULD IT BE IMPLEMENTED

No significant irreversible environmental changes would result from implementing the water conservation recommendations. However, the wastewater reclamation recommendations could result in significant environmental changes in the event that construction of new treatment facilities, plant expansions to accommodate reclamation and additional distribution systems were required. The resource value of land disturbed or altered altogether by construction will vary from project to project. Again, those impacts will be addressed in the facilities planning process.

The major significant irreversible environmental changes of the Water Supply Management Plan are associated with the major water supply projects currently proposed for construction or in the early stages of construction. In the case of the dams and storage reservoirs, the irreversible change involves changing free flowing streams to flat water environments, the inundation of valleys and the loss of resources of the inundated land. The aqueducts would change the environmental character of the land through which the aqueducts pass and the character of streams crossed. These impacts have been discussed in the environmental documents discussed earlier. Such changes associated with system intertie proposals would be analyzed in the continuing planning process and by implementing agencies in the planning phase when they prepare the environmental documents required by Federal and State laws.

THE GROWTH INDUCING IMPACTS OF THE PROPOSED ACTIONS

The water conservation and wastewater reclamation recommendations should not have growth inducing effects. Water saved and use of reclaimed wastewater would free a certain amount of potable water supply to serve future growth. In areas where development is currently constrained by a shortage of supply, the effect of conservation and reuse measures could be to accommodate growth in those areas in the future.

Plans to construct dams and major water supply reservoirs often face opposition on the basis of their growth inducing characteristics and the adverse environmental impacts associated with the induced growth. The growth inducing aspects of the major dam project, the Warm Springs Dam and Lake Sonoma Project, are described in the Environmental Impact Statement prepared by the Corps of Engineers for that proposed project. A major benefit of a comprehensive analysis of conservation and reuse and system interties would be the ability to assess the need for major water supply projects. As long as the actions recommended are consistent with the

recommendations in the land use management/development controls portion of the Air Quality Maintenance Plan and the water quality and solid waste management recommendations, the effect would be to accommodate growth in the region with minimal environmental, economic and social impacts. Rather than inducing growth, the comprehensive strategy for water supply management would constitute another tool for accommodating growth planned for in the region.

IMPACTS OF THE SOLID WASTE MANAGEMENT PLAN

DESCRIPTION OF THE PROPOSED PROJECT

Eighteen policies are proposed to improve solid waste management and meet applicable Federal and State standards and objectives. Each policy includes a series of actions to meet plan objectives. Together the recommendations describe a physical system for managing the Bay area's solid wastes. They also provide a regional approach for solving the basic solid waste management problem in the Bay area: that we are burying most of our wastes in landfills instead of conserving and recovering materials and energy from wastes. A complete description of the recommendations appears in Chapter V of Volume I of the Draft EMP and on the Plan Recommendations tables on pages V-33 through V-68. The eighteen policies are:

- Policy 1 - The regional solid waste management plan should primarily be based on the county solid waste management plans: primary responsibility for adequate solid waste management shall rest with local governments.
- Policy 2 - Regional solid waste management planning should be coordinated with State and local planning and be an integral part of areawide environmental management planning.
- Policy 3 - Regional or subregional resource conservation and recovery programs should be consistent with the regional solid waste management plan and the EMP, and should focus on multi-jurisdictional projects for waste reduction and recovery of materials and energy from solid waste.
- Policy 4 - All solid waste disposal sites must be situated, designed and operated to provide protection to the surface and groundwater quality and the natural environment as well as protection of public health and safety.
- Policy 5 - Where possible methods should be incorporated into the existing permit process for solid waste management facilities that will facilitate early discussion of project-related issues
- Policy 6 - Agencies existing regulations, including time limits for review and comments, should be clarified and additional ones adopted where necessary to formalize procedures used in processing of or commenting on applications.

Policy 7 - Permit coordination procedures for Solid Waste Management activities should be integrated with other coordination projects in the future, as appropriate.

Policy 8 - Public education programs are essential to promote awareness of need for waste reduction.

Policy 9 - Federal and State governments should adopt legislative and administrative changes that promote waste reduction.

Policy 10 - Regionwide cooperation is needed to develop stable, adequate markets for secondary materials.

Policy 11 - Federal and State governments should adopt legislative and administrative changes to improve competitive positions of secondary materials and products containing secondary materials.

Policy 12 - All levels of governments should encourage development of source separation programs.

Policy 13 - Adequate planning for hazardous waste management requires accurate data.

Policy 14 - Waste reduction, source separation and recovery of hazardous industrial wastes should be promoted in the interest of limiting land disposal.

Policy 15 - Regulations should ensure safe and proper handling of hazardous wastes.

Policy 16 - Future Class 1 disposal sites and facilities should be located so that they do not have adverse effects on human health and safety, air and water quality, wildlife, critical environmental resources and urbanized areas.

Policy 17 - A regional plan for long-term wastewater solids management should be prepared and updated

Policy 18 - Facilities for wastewater solids management should be constructed in conformance with the regional wastewater solids plan and the Environmental Management Plan (208 Plan).

SIGNIFICANT ENVIRONMENTAL EFFECTS OF THE PROPOSED PROJECT

The potential environmental, institutional/financial, economic and social impacts of actions recommended to carry out the eighteen policies for solid waste management are summarized on the Plan Recommendation tables in Chapter V of Volume I of the Draft EMP. Section E titled "Benefits and Costs of Plan Recommendations" in Chapter V summarizes the significant impacts.

As required by NEPA and CEQA, this discussion assesses the significant environmental effects of the Solid Waste Management Plan. The significant environmental effects are:

- o impacts on air and water quality
- o reduction of public health and safety hazards
- o aesthetic, nuisance and ecological effects related to solid waste
- o long-term benefits for the resource base from waste reduction and recovery
- o energy effects

For the purposes of the Draft EIR, the policies in the Solid Waste Management Plan have been classified into four types of recommendations:

- o management planning recommendations
- o landfill operational improvements recommendations
- o advocacy recommendations for waste reduction, recycling and secondary materials markets
- o construction related recommendations.

The first type, management planning recommendations, includes public education, research, market development, legislative and administrative changes (such as streamlining the permit process) and continuing integrated solid waste management planning. Policies of this type are Policy 1, 2, 5, 6, 7 and 8. The significant environmental effects of actions recommended to implement these policies are the expected benefits for the natural/physical environment as additional information improves the decision-making capabilities of the numerous public agencies and private firms involved in solid waste management activities. Improved information and dissemination of that information should also affect citizen attitudes and decisions about solid waste management activities in the home. These recommendations would also benefit the natural/physical environment as a result of improved waste handling and disposal practices.

The second type of recommendation would result in improvements in current practices of landfilling wastes. Policies of this type are Policy 4, 13, and 15. These include upgrading operational requirements at landfills and enforcing requirements for handling and disposal of hazardous wastes. The significant environmental effects are the expected benefits for environmental quality (protection of surface and groundwater quality and improved air quality at landfills-dust and odor), public health and safety, and resource protection.

A third type of recommendation involves advocating Federal, State and private enterprise actions that would result in waste reduction, source separation, recycling and a competitive position for secondary materials.

Policies of this type are Policy 3, 9, 10, 11, 12 and 14. The expected benefits include conservation of resources (including energy), and protection of environmental quality.

The fourth type of recommendation would ultimately result in construction related activities. Policies of this type are Policy 16, 17, 18, Action 12.2. Demonstration projects are advocated to promote large-scale resource recovery planning. Facilities are recommended to process, handle and dispose of wastewater solids (sewage sludge). Recovery of hazardous wastes, and other materials and energy recovery would require facilities in many cases. These actions are premised on the expected benefits of resource recovery and energy production and conservation. The significant environmental effect is the expected slowing of the rapid consumption of diminishing resources. Before any specific action is taken, the proposed projects will be investigated further and alternative facilities and processes will be planned. At that point, other agencies will become Lead Agencies under the definition of CEQA. Federal grantees would be subject to NEPA requirements. The site-specific environmental impacts of proposed projects would be assessed as required by Federal and State laws.

The San Francisco Bay Region Wastewater Solids Study is developing a regional plan for long-term wastewater solids management solids management and detailed facilities plans for the four largest wastewater management agencies (City and County of San Francisco, City of San Jose, Central Contra Costa Sanitary District and East Bay Municipal Utility District). The Regional Plan is being incorporated into the solid waste management recommendations. The Draft Project Report/EIR/EIS for Sludge Management at the four major facilities will be written and processed in the spring of 1978. The sludge management alternatives recommended in the Draft Project Report will be based on the Regional Plan analysis and recommended projects for sludge management. An impact assessment of the site specific environmental effects of sludge management projects recommended for the wastewater management agencies will be discussed in the Draft Project Report/EIR/EIS.

The sludge management system includes sludge process, transport and disposal or use. With the exception of thermal and combustion processes, the environmental effects of processing are not normally significant. The potential for significant environmental effects is associated with the transport and disposal/use components of the system.

The significant environmental effects include the potential for water quality impacts (e.g. surface runoff associated with landfilling and land application, and groundwater contamination), air quality impacts (e.g. odor, transport truck emissions), and physical resource impacts (e.g. the effects on the supply and use of land associated with landfill disposal and land application) and energy impacts (truck and pipeline transport and energy production associated with co-combustion). Land application of raw and composted sludge may have beneficial effects when used in agriculture, siviliculture, public parks, golf courses, highway rights-of-way, and home gardens. Possible health effects, associated with plant uptake of heavy metals such as cadmium when sludge is used in agricultural production, require careful monitoring and selection of crops that minimize the uptake of metals.

ANY SIGNIFICANT ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED IF THE PROPOSAL IS IMPLEMENTED AND MITIGATION MEASURES PROPOSED TO MINIMIZE THE SIGNIFICANT EFFECTS

The potential for significant (adverse) environmental effects is associated with the development of new and expansion of existing landfills and the operation of those facilities as well as the construction of source separation, resource and energy recovery facilities and sewage solids handling facilities and disposal alternatives. These effects include the dust, noise, surface runoff and energy use related effects associated with construction activities. Other related effects include the loss of resource value on or adjacent to the site, the changes in land use necessary to accommodate new or expanded facilities and land disposal alternatives and visual amenity impacts. The dust and noise effects can be minimized by noise and dust abatement measures. Careful engineering design and siting measures will minimize the resource effects of changes in land use and visual amenity effects. The recommendations for surface runoff controls during construction (Action 8.9 - Control erosion - in the Water Quality Management Plan would minimize those adverse environmental effects.

Operation Effects

Other potential significant (adverse) environmental effects of recommended actions result from operation of solid waste management facilities. The major potentially adverse environmental effects of operation of any number of the current or proposed facilities (e.g. landfills and resource recovery projects) are the potential impacts on air and water quality. Those effects would be minimized or eliminated by coordination with the air quality and water quality management planning recommendations. All facilities and operating practices will have to meet Federal and State air and water quality standards and objectives.

Effects of Wastewater Solids Projects

Construction of wastewater solids management facilities may have significant (adverse) environmental effects of a short-term, localized nature. These include the dust, noise, surface runoff and energy-use related effects associated with construction activities. Other effects may include the alteration of land (and in some cases changes in land use) and visual impacts associated with the construction. These effects can be minimized by noise and dust abatement measures, careful engineering design, and siting measures. The recommendations for surface runoff control measures at construction sites (Action 8.9 - Control Erosion - in the Water Quality Management Plan) would minimize any construction related adverse effects of surface runoff.

Other significant (adverse) environmental effects are associated with the sludge management system (sludge process, transport and disposal or use). The significant effects of processing are associated with thermal and combustion processes. This component of the system would be subject to Federal and State air quality standards, thus minimizing any potential harm to the environment. The significant effects of the transport system are associated with transport truck emissions and energy use. The mobile source emission control recommendations (General Policy II of the Air Quality Maintenance

Plan) would minimize those adverse effects. Vehicle exhaust emission controls would minimize harm to the environment both by reducing emissions and from the energy savings through improved maintenance of engines and emission control systems.

The potential significant (adverse) effects of the disposal or use component of the sludge management system are associated with landfilling sludge or land application. One effect is the surface runoff and groundwater pollution potential of both alternatives. Harm to the environment would be minimized through coordination with the Water Quality Management Plan recommendations (and the Water Supply Management Plan recommendation to protect the region's groundwater resource through wise management) to protect water quality and meet Federal and State water quality standards and objectives. Another effect of land application of sludge is associated with the potential for plant uptake of heavy metals such as cadmium when sludge is used in agricultural production. The potential public health effects can be mitigated by careful monitoring and selection of crops that minimize the uptake of metals.

The potential significant (adverse) environmental effects (and measures to minimize those effects) of the wastewater solids management recommendations are being identified in the Regional Wastewater Solids Study. The Draft Project Report/EIR/EIS scheduled for completion in the Spring of 1978 will identify the potential significant (adverse) environmental effects associated with the sludge management projects for each of the four largest wastewater treatment agencies in the Bay area.

Other projects proposed for sludge management at other treatment facilities in the region will be planned as a part of the Section 201 facilities planning process and will have EIR/EIS documents prepared for them as required by CEQA and NEPA.

ALTERNATIVES TO THE PROPOSED ACTION

The No Action Alternative to the Solid Waste Management Plan

The major alternative to the Solid Waste Management Plan in its entirety is one of no action. The impacts identified in the Plan Recommendation tables in Chapter V, pages V-33 through V-68, were measured against that alternative. The no action alternative was not felt to be feasible for several reasons. SB 424 (Chapter 689 of the Statutes of 1977), which amended SB 5 (Nejedly-Z'berg-Dills Solid Waste Management and Resource Recovery Act of 1972), requires ABAG to prepare a Bay Area solid waste management plan. The required plan must respond to issues identified in the county solid waste management plans as needing a regional perspective and solutions. Additionally, the plan would ensure the consistency of county and regional plans.

Another reason that no action is not a feasible alternative is that without a regional solid waste management plan there would be no regional scope to the critical solid waste issues facing the region. No action would not result in the needed coordination of multi-county resource recovery projects, in the coordination of efforts to develop markets for secondary materials, or a regional approach to identification of potential Class I (hazardous wastes) disposal sites. There are several issues identified in the county solid waste management plans that cannot be dealt with at the intra-county level. While those issues are shared problems, a viable program requires a joint and

cooperative approach involving both public agencies and private firms to identify a regional plan for action.

Several alternatives were considered and rejected for recommendations of the solid waste management chapter. Those alternatives and the reasons for rejection are as follows:

Alternatives to Municipal Wastes Management

One alternative to the proposed policies for municipal wastes management would have involved the re-examination of the nine county solid waste management plans and the development of a truly regional management system through optimization of regional and subregional solid waste processing, transfer, and disposal facilities with or without the constraint of county boundaries. For example, under this alternative, the East Bay Municipal Utility District (EBMUD) could become a subregional (two-county) solid waste management agency.

This alternative was not considered practical or publicly desirable. While regional alternatives were in fact discussed in the county plans, the requirements and deadlines of SB 5 made concentration on intra-county solid waste management systems mandatory.

The county plans cover all aspects of solid waste management within the county, including collection. Collection, with very few exceptions, is carried out by private operators under franchises with local governments. While collection is entirely a local responsibility, sometimes it is inseparable from processing and disposal as the franchise agreements, which usually run for several years, may specify the disposition of the collected wastes.

Implementation of county and regional solid waste management plans is largely vested in the county solid waste management authorities. Planning for regional and subregional processing and disposal systems requires the participation of affected local governments and the franchised operators in negotiating the necessary changes in franchise agreements.

Another general alternative would have involved the development of a regional solid waste management plan by combining the nine county plans and implementation programs. This alternative was rejected for several reasons.

The county plans will be revised by the counties in the future as more information becomes available about resource recovery technology, environmental effects, costs, and the amount of waste produced. The emphasis of county plans may change in the future as the county, its cities and the private sector update the county plan as required by law. There are already a number of multi-county disposal arrangements. As nearby sites close, there will inevitably be a need for more cross-county transfer and disposal. In addition, the economies of scale that can be realized from resource and energy recovery systems may spur multi-county participation. Further, individual county plans cannot fully address regional air and water quality issues related to solid waste management. These issues must be addressed by areawide plans required under the Federal Water Pollution Control Act and the Clean Air Act. Finally, Chapter 689 of the Statutes of 1977

requires that regional solid waste issues be addressed by a regional plan. Issues such as resource recovery and secondary materials are identified in most county plans as regional in nature. No county plan adequately addresses these issues. A viable program requires a regional, joint and cooperative approach involving public agencies and private firms.

Alternatives to Hazardous Wastes Management

One alternative to the proposed actions for hazardous waste management would have been to develop a comprehensive hazardous waste management system for the region instead of accepting the present system and making recommendations to improve the present system.

However, without accurate data about the quantities and types of wastes being generated, it would be very difficult to develop a more comprehensive or long-range management system. Therefore, this alternative will be considered in the continuing environmental management planning process using data collected.

Alternatives to Wastewater Solids Management

Alternatives for wastewater solids management are being considered by the San Francisco Bay Region Wastewater Solids Study. The alternatives for solids processing and disposal or use include commercial and agricultural use, composting/marketing, land disposal, energy production and combustion. The alternatives discussion in the Regional Wastewater Solids Plan will describe those alternatives in greater detail.

General Alternatives for Assessment in the Continuing Planning Process

Within various subparts of the program outlined for continuing solid waste management planning, alternatives and combinations of management approaches will be explored. For example, the facilities plans prepared for sludge management at the four largest wastewater treatment agencies will identify alternatives. (The Draft Project Report/EIR/EIS portion of the Bay Region Wastewater Solids Study will be available in the spring of 1978).

Resource recovery can be accomplished in a number of ways as can source reduction and energy recovery. Alternatives will be identified and assessed.

Alternative sites for disposal of hazardous wastes as well as alternatives to landfilling these wastes will be investigated. Alternative development and identification of impacts of alternatives will be an important aspect of continuing integrated solid waste management planning.

Institutional Alternatives to Implement the Solid Waste Management Plan

An alternative that could have been recommended throughout the Solid Waste Management Plan was the creation of new agencies or a "super" regulatory agency to implement the recommended actions.

The Environmental Management Task Force Plan Implementation Committee directed ABAG staff with regard to institutional arrangements for plan implementation. Chapter IX of Volume I of the Draft EMP describes the "guiding principles"

developed by that committee. The Committee indicated (and the EMTF endorsed for the draft plan) that successful initial implementation of the plan required the use of existing agencies with implementing authorities where those agencies could reasonably be presumed able to effectively implement proposed actions. The implementing authorities for plan recommendations are distributed among many agencies in the region. Past efforts have shown that cooperative agreements (e.g. Joint Powers Authorities, Memoranda of Understanding) can be effective means of implementation. The EMTF action ruled out changes in institutional structures such as the creation of new agencies or a "super" regulatory agency.

In addition to the no action alternative to the Solid Waste Management Plan in its entirety and the alternatives considered for the Municipal and Hazardous Waste policies and actions, alternatives to specific policies and actions were also considered.

Alternatives to Policy 1

The no action alternative was considered for Policy 1 and rejected as not feasible. SB 424 requires the regional Solid Waste Management Plan to be based primarily on county solid waste management plans. SB 5 states that primary responsibility for adequate solid waste management and planning shall rest with local government. No action would not have resulted in regional plan based primarily on county plans with local government maintaining required responsibilities.

Alternatives to Policy 2

The no action alternative was not considered a feasible alternative. The Resource Conservation and Recovery Act (RCRA), SB 424 and Section 208 of the Federal Water Pollution Control Act Amendments requires coordination of regional, State and local solid waste management planning with the 208 Plan.

Alternatives to Policy 3

The no action alternative was not considered a feasible alternative. SB 5 and RCRA require such consistency and focus in regional solid waste management planning.

Alternatives to Policy 4

The no action alternative was not considered a feasible alternative. Federal and State laws, regulations and water quality standards and objectives require this of disposal sites.

Alternatives to Policy 5, 6, and 7

The no action alternative was not considered a feasible alternative. No action would effectively maintain the status quo with little evidence that change would occur in a timely, coordinated manner.

Policy 5 - The existing permit approval process can and should be improved upon. It is not clear that without the recommendations any actions would be taken to improve the existing system. Policy 6 - The same is true for the agencies existing regulations including time limits for review and comment. Without the actions recommended, it is not clear that the situation would be changed, and the problems need attention. Policy 7 - Permit coordination with other coordination projects is needed. Without the actions recommended, it is not clear that the coordination situation would change.

Alternatives to Policy 8

The no action alternative was not considered a feasible alternative. It would effectively maintain the status quo with little chance of change in a timely, coordinated manner. Waste reduction and resource recovery programs cannot be implemented effectively without public support and acceptance. A recommendation for public education programs appeared to be an important component of the solid waste management objectives.

Alternatives to Policy 9

The no action alternative was not considered feasible. It would effectively maintain the status quo with little evidence that current situations would change in a timely, coordinated manner. An effective way of reducing waste is to change manufacturing standards and regulations through governmental actions. Another alternative considered was to recommend that industries change manufacturing processes to promote waste reduction. In general, industries will change manufacturing processes to reduce wastes only if adequate incentives exist to do so. The actions recommended appeared more likely to affect waste reductions.

Alternatives to Policy 10

The no action alternative was not considered feasible. It would effectively maintain the status quo with little evidence that change would occur in a coordinated manner. Market development is needed for secondary materials. Without a stable market, resource recovery programs cannot be carried out effectively. Actions are necessary to affect secondary materials market development.

Alternatives to Policy 11

The no action alternative was not felt to be feasible. It would effectively maintain the status quo with little evidence that change would occur in a timely, coordinated manner. Currently, secondary materials are not as competitive as virgin materials. Governmental action is needed to provide incentives for secondary materials. Another alternative considered was to recommend that industries improve the competitive positions of secondary materials and products containing secondary materials. This action was not selected. In general, industries appear unwilling to introduce such changes to the market system by themselves, in other words, without public (government) support.

Alternatives to Policy 12

The no action alternative was not considered feasible. It would effectively maintain the status quo with little evidence that change would occur in a timely, coordinated manner. Source separation is an effective way to recover reusable resources. Programs should be supported by all levels of governments. Another alternatives considered was to recommend that private scavenger companies develop source separation programs. This alternative was not selected. The selected policy would not exclude private scavenger companies from developing source separation programs. In general, the private sector will collect source separated materials only if adequate incentives exist for them to do so. Actions are necessary to affect source separation programs.

Alternatives to Policy 13

The no action alternative was not considered feasible. RCRA requires accurate data for hazardous waste management.

Alternatives to Policy 14

The no action alternative was not considered feasible. It would effectively maintain the status quo with little evidence that change would occur in a timely, coordinated manner. If current trends continue, hazardous waste management would become a more serious and bigger problem and additional disposal site could be needed. Actions appeared necessary to encourage waste reduction, source separation and recovery of hazardous wastes.

Alternatives to Policy 15

The no action alternative was not considered feasible. RCRA and other State and Federal laws require safe and proper handling of hazardous wastes.

Alternatives to Policy 16

The no action alternative was not considered feasible. It would effectively maintain the status quo with little evidence that change would occur in a timely, coordinated manner. It takes at least two years to develop a Class I disposal site (from initial planning to availability of the site for use). Under the status quo, potential hazardous waste sites would not be investigated. If sites reach capacity and continued landfilling is necessary, it would take two years to develop those sites. Advanced planning and identification of potential sites appear to be an advised precautionary measure.

Alternatives to Policy 17

The no action alternative was not felt to be feasible. The Federal Water Pollution Control Act requires adequate handling and disposal of sewage sludge to protect ground and surface water quality. The county solid waste management plans identified management of sewage sludge as a regional issue. A regional plan for sewage solids management and facility planning recommendations for wastewater treatment facilities is required.

Alternatives to Policy 18

The no action alternative was not considered feasible. Sections 208 and 201 of the Federal Water Pollution Control Act require future 201 projects to be consistent with the Environmental Management Plan.

RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF MAN'S ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

The solid waste management recommendations would not change practices in the next few years. As such, the resource, energy and land consumptive aspects of current solid waste management practices will continue. The programs recommended to investigate and promote alternatives to land-fill disposal, materials and energy recovery and waste reduction would all contribute to the maintenance and enhancement of long-term productivity of diminishing resources, including land.

ANY SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL CHANGES WHICH WOULD BE INVOLVED IN THE PROPOSED ACTION SHOULD IT BE IMPLEMENTED

The environmental changes associated with the solid waste management recommendations are not entirely irreversible in a long-term basis. Continued landfilling while alternative practices are further investigated and demonstration projects are carried out is not entirely irreversible. Most landfills that reach capacity can, after a period of time and following appropriate reclamation measures, be converted to other uses such as parks and other recreational facilities. A major rationale for developing sewage solids disposal alternatives, source separation, materials and energy recovery and secondary materials markets is to slow the process of rapid consumption of diminishing resources. These actions would affect the irreversible environmental changes of a short-term nature associated with current solid waste management practices.

THE GROWTH-INDUCING IMPACTS OF THE PROPOSED ACTIONS

The solid waste management recommendations should not have growth inducing impacts nor will any secondary effects of the recommendations have such impacts.

IMPACTS OF THE AIR QUALITY MAINTENANCE PLAN

DESCRIPTION OF THE PROPOSED PROJECT

Four policies are proposed to improve air quality and meet the Federal standard for oxidants. Each policy includes a series of actions to carry out the objectives of the policy. A complete description of the recommendations appears in Chapter VI of Volume I of the Draft EMP and in summary form on the Plan Recommendation tables on pages VI-133 through VI-1420. The four policies are:

- General Policy I - Minimize hydrocarbon emissions from stationary sources
- General Policy II - Minimize hydrocarbon emissions from motor vehicles
- General Policy III - Reduce motor vehicle emissions through transportation actions to reduce vehicle use
- General Policy IV - Alter regionwide development patterns to reduce automobile travel by means of local and regional policies on land use and urban services

THE SIGNIFICANT ENVIRONMENTAL EFFECTS OF THE PROPOSED PROJECT

The potential environmental, institutional/financial, economic and social impacts of each action recommended to carry out the four policies for air quality maintenance are summarized in the Plan Recommendation tables in Chapter VI of Volume I of the Draft EMP. The significant impacts are discussed in Section 9 "Benefits and Costs of the Plan" (pages VI-150 through VI-160).

As required by NEPA and CEQA, this discussion assesses the significant environmental effects of the Air Quality Maintenance Plan. The significant environmental effects are:

- o reductions in hydrocarbon emissions
- o improvements in public health
- o reduction in damage to vegetation
- o improved visual amenities
- o physical resource supply benefits
- o energy consumption impacts

The AQMP is a comprehensive strategy involving stationary source controls, mobile source controls, transportation controls and land use/development controls. The strategy includes requiring permits for new, modified and indirect sources of air pollution emissions--commonly referred to as New Source Review (NSR) and Indirect Source Review (ISR).

The significant environmental effects of the AQMP comprehensive strategy include the direct effects of reduced hydrocarbon emissions. Without considering reductions from New Source Review and Indirect Source Review the controls in the comprehensive strategy will almost reduce emissions in 1985 enough to meet the Federal ambient oxidant standard of 0.08 ppm. The additional reductions needed to meet the standard can be achieved through application of new and indirect source review regulations. The AQMP projections in the year 2000 (without NSR and ISR), assuming implementation of a comprehensive strategy, show violation of the oxidant standard. Continued application of these programs could result in sufficient emission reductions to ensure long-term maintenance of the standard.

Other significant environmental effects of the comprehensive strategy are the public health benefits, and the reduction in damage to vegetation that are indirect benefits of improved air quality. Because photochemical oxidants have been found to cause eye and nasal irritations, irritation of mucous membranes, respiratory distress, coughing, increased lung fluid, rapid pulse rate, lowered blood pressure, asthma attacks and overall decreases in the quality of human performance, the reductions in hydrocarbon emissions and thus exposure to photochemical, oxidant and ozone concentrations should evidence decreased incidences of these problems. The benefits would be particularly significant for sensitive population groups such as the elderly, children and the chronically or temporarily ill. The general population should also benefit from the reductions. Although the long-term exposure effects from moderate levels are not as easily observed as those from short-term exposure to high levels of pollutants, reduced emissions and concentration levels should have beneficial health effects.

Reductions in adverse biological effects on vegetation would result from improved air quality. Included in the adverse effects on vegetation that would decrease are: visible injury and discoloration of foliage, leaf drop, reduced plant vigor and growth and reduced total loss (plant death).

Trees, shrubs and many agricultural crops in the Bay area are affected by the oxidant levels which occur here. Certain crops are no longer grown here (snap dragons, chrysanthemums) and others evidence serious damage (grapes, carnations, orchids). Crops such as grapes and ornamental plants are specialty crops grown in few other parts of the country. They are an important component of the region's economy. To realize their productive value, certain specialty crops must be grown in locations proximate to urban areas. Cut flowers are an example of such a specialty crop. Many Bay area ornamental growers have moved to Half Moon Bay and Salinas to avoid air pollution damage. Improved air quality would improve the viability of this important sector of the Bay area economy.

The Air Quality Maintenance Plan includes four types of recommendations. The first type of recommendation (General Policy I) includes industrial source controls and process changes to affect a reduction in hydrocarbon emissions. Source controls involve the installation of pollution control equipment such as scrubbers, secondary vacuum assist systems, and vapor and solvent recovery systems. Process changes include changing production inputs to use of paints and other coatings which have a high solids content

or are water-based. Another process change involves the use of closed systems for storage and transfer of organic liquids. Several of these controls require resources (construction materials) for their manufacture.

There are several significant environmental effects associated with the stationary source control recommendations in addition to the improvements in air quality. Certain controls are energy consumptive (water based coatings and solvent incineration), others produce energy savings (high solids coatings and improved vapor recovery systems). An improvement in the visual quality of the region is expected from the reduced amounts of hydrocarbons available for reaction with other gases to form photochemical aerosols. The control measures proposed are designed to meet the Federal oxidant standard. A reduction in hydrocarbon emissions and concentrations would result in public health benefits as discussed.

Another type of recommendation, General Policy II, requires additional exhaust emission controls on light and heavy duty vehicles to affect reductions in hydrocarbon emissions from those mobile sources. Several significant environmental effects are expected.

Reductions achieved by use of improved technologies for conventional engines should not have significant physical resources impacts. Use of alternative fuel sources could require new materials for engine manufacture (e.g. batteries for electrically-powered vehicles). Should new engine technologies result in use of less specialized fuels, one result would be a reduction in dependence on gasoline and/or petroleum. Improved mileage efficiency gains could mean annual savings of millions of barrels of oil. Other significant energy effects are expected. Improved maintenance (implemented through the recommended vehicle inspection/maintenance program) and heavy duty gasoline truck retrofitting could save hundreds of thousands of barrels of oil each year. A significant improvement in the visual quality of the region's air is another expected significant environmental effect. The reduction in carbon monoxide emissions from motor vehicles would have positive health benefits particularly for individuals exposed to carbon monoxide concentrations in urban areas.

A third type of recommendation (General Policy III) involves reducing motor vehicle emissions through transportation controls that reduce vehicle use. The actions recommended include: increased tolls on bridges, a regional parking strategy, additional transit service, carpool lanes and ramp metering, an auto control zone in the San Francisco Central Business District (CBD), ridesharing service expansion and expansion of bicycle systems. These actions would reduce hydrocarbon emissions. Another significant environmental effect would be the positive energy benefits from gasoline savings resulting from carpooling, shifts to transit and bicycles, and traffic flow improvements. In addition to the expected improvements in the visual quality of the region's air, amenity benefits would be associated with the improved pedestrian environment in the San Francisco auto-control zone.

Improved pedestrian safety in the auto control zone and a reduction in auto accidents associated with peak period traffic flow improvements are also expected benefits. A significant effect on development patterns is anticipated as incentives such as additional transit service and disincentives on private auto use should encourage a more compact development pattern with employees residing closer to transit systems and their jobs.

The final type of recommendation (General Policy IV) involves land use management/development controls to reduce automobile travel and thus emissions. The sixteen actions proposed to carry out the general policy include actions that would encourage development in existing urban areas, in urban service areas and in areas with commitments for urban services. Conversely, proposed actions would direct development away from areas outside urban service areas, in environmentally sensitive areas, and discourage single purpose large-scale developments (i.e. encourage mixed developments-residential, commercial and industrial). The objective of the development controls is to reduce the number and length of automobile trips in the region. While directly related to transportation decisions, an important factor is achieving more compact development throughout the region.

The significant environmental effects of the land use management/development controls are far ranging. The implementing actions are an integral part of the comprehensive strategy necessary to achieve and maintain the Federal oxidant standard. Without a comprehensive strategy, the standard would not be met by 1985-87 (as required by the Clean Air Act Amendments) and maintained thereafter. The comprehensive strategy also provides the flexibility required to account for additional monitoring data that could suggest the need for more or less stringent programs.

The following discussion of significant environmental effects describes the results of assessing the effects of compact development in the year 2000 using the low population projection of 5.4 million.

The Compact Growth Alternative represents a different pattern of land development than would occur if the land regulation and service policies now in effect in local jurisdictions regionwide continue in force for 15 to 20 years. This growth pattern is designed to achieve the following objectives:

- o Reduce long distance auto commuting;
- o Reduce auto trips and increase transit use

To achieve reduced auto dependency, the Compact Growth Alternative seeks to reverse three fundamental characteristics of development of the last 20 to 30 years. The change would:

- o Reduce urban sprawl and increase densities moderately in new development in outlying areas
- o Bring housing and jobs throughout the region back into close proximity and toward a balanced mixture of housing and jobs in most jurisdictions;

- o Promote rebuilding and infilling in existing city centers

These shifts in development represent a more precise statement of ABAG's 1970 city-centered Regional Plan and regional growth policies adopted by ABAG in 1973 and 1974. They also reflect the existing and emerging policies of many of the region's local governments, now being implemented on a piece meal basis.

Amount of Growth

The projected county-by-county growth pattern to 1990 and 2000 is indicated in Table 2 , comparing housing, population, and job growth in the Compact Alternative with high and low regional trends. Air quality analysis was based on the year 2000 projections and focused on comparisons of the low growth regional trend and the effects of compact growth on that same low growth level. The 1990 projections are included here for more ready comparison with the projections done by individual cities and counties.

The total regional growth examined in the Compact Growth Alernative is the same as the low trend for the region as a whole. This total growth is allocated around the region assuming more compact development at the urban fringe, more rebuilding within the cities, and higher zoning densities than now in force, especially in areas with transit service.

Shift of Growth Emphasis From Outlying Suburbs to City Centers

The AQMP Compact Growth scenario is premised on a shift in the location of new housing growth from the outlying suburban fringe to the existing cities of the region. Under current regulations, new housing development opportunities could locate in outlying suburban locations and usually at very low density. This would constitute the bulk of the problem for air quality. These developments would be largely automobile dependent and long distances from job opportunities. Even the close-in development, assuming current zoning, would likely be of such low density and so far from work and shopping locations as to be dependent on the automobile.

The AQMP compact growth scenario assumes over 90% of new housing opportunities would be located in existing cities or close-in areas that can be annexed and provided with city services. About 2/3 of the new housing units could still locate in newly developing areas, but adjacent to the already built-up areas and at higher densities than currently permitted. About 10% of the new housing could be located on scattered vacant sites bypassed by the suburban development of recent decades. About 1/4 of the new units would need to be added as rebuilding projects within the cities.

Balanced Growth in Housing and Jobs Throughout the Region

In order to reduce home-to-work commuting, the AQMP Compact Growth scenario assumes shifts in housing locations closer to existing and projected job opportunities. Thus, jurisdictions that are most mis-matched now or in the regional growth trend, would be more balanced in jobs and housing by the year 2000. Marin County, for example, would yield more jobs and less

TABLE 2

COMPARISON OF PROJECTIONS
REGIONAL TRENDS and AQMP COMPACT GROWTH
(x 1,000's)

1990

COUNTIES	OCCUPIED HOUSING UNITS			POPULATION			JOBS		
	Regional Trends High	Regional Trends Low	Compact Growth	Regional Trends High	Regional Trends Low	Compact Growth	Regional Trends High	Regional Trends Low	Compact Growth
ALAMEDA	504.1	498.3	537.4	1199.3	1118.5	1201.2	526.4	503.4	503.6
CONTRA COSTA	301.4	310.8	281.8	767.9	747.2	695.4	209.1	195.2	193.2
MARIN	106.8	105.1	98.7	277.3	257.8	234.3	65.1	61.8	63.2
NAPA	36.9	36.4	36.1	90.3	84.2	84.8	35.8	34.0	34.1
SAN FRANCISCO	319.1	316.4	320.9	643.3	607.0	617.2	603.2	586.4	586.8
SAN MATEO	273.6	267.3	296.1	668.2	623.1	675.5	273.9	260.1	260.1
SANTA CLARA	542.8	539.3	538.6	1389.8	1295.9	1276.5	749.8	707.1	708.2
SOLANO	104.9	111.3	91.6	263.0	255.6	223.8	72.1	67.2	65.9
SONOMA	133.7	133.4	117.0	326.4	294.7	275.2	117.8	92.3	92.5
REGION	2323.5	2318.2	2318.2	5625.4	5284.1	5284.1	2652.4	2507.6	2507.6

2000

COUNTIES	OCCUPIED HOUSING UNITS			TOTAL POPULATION			JOBS		
	Regional Trends High	Regional Trends Low	Compact Growth	Regional Trends High	Regional Trends Low	Compact Growth	Regional Trends High	Regional Trends Low	Compact Growth
ALAMEDA	561.2	520.1	570.6	1284.3	1114.4	1217.1	553.1	507.5	508.8
CONTRA COSTA	318.2	324.0	291.6	799.6	759.6	690.9	228.4	198.8	197.3
MARIN	112.1	115.2	102.9	292.3	280.7	238.0	68.9	62.7	64.3
NAPA	41.2	40.1	38.2	102.0	90.8	86.5	40.4	36.6	36.6
SAN FRANCISCO	336.7	331.4	325.3	664.6	613.3	606.4	624.1	589.8	590.0
SAN MATEO	351.1	294.6	318.3	804.5	647.9	699.5	292.2	263.4	262.3
SANTA CLARA	593.2	556.6	583.2	1465.7	1281.9	1321.0	826.4	740.7	743.0
SOLANO	130.9	133.5	106.1	322.9	289.5	248.0	85.3	73.5	71.4
SONOMA	169.0	158.1	137.5	415.4	340.4	311.1	141.3	102.1	101.5
REGION	2613.4	2473.7	2473.7	6151.3	5418.5	5418.5	2860.1	2575.1	2575.1

housing in the Compact Growth Alternative so as to reduce out-commuting. Northern Alameda County would experience slightly greater job growth and substantial housing growth in the compact scenario so as to reduce in-commuting.

Higher Residential Density Would Be Encouraged

The AQMP Compact Growth scenario is premised upon increasing densities in some locations beyond that currently allowed by local zoning. It does not suggest densities notably higher than now exists on the ground. The problem is that most local zoning densities are premised upon the development patterns of the post-1950 suburban development era. These densities are typically lower than the development of the 1920's and 1930's. This is especially true in the suburban communities.

In some of the older cities there is a trend toward "downzoning" of older developed areas to preserve neighborhood character by excluding new high density development. Adequate regulation of new higher density development in or near older neighborhoods can preserve neighborhood identity while bringing greater diversity.

The AQMP scenario suggests increasing densities for new development from a regionwide average of less than 3 units per acre to a regionwide average of about 6 units per acre. This would approach but still be less than the 9 dwelling units per acre that exists on the ground now. The existing regionwide density is notably influenced by the higher density of San Francisco. Thus, the suggested return to densities of the pre-1950 era does not imply massive high rises. It means more town-houses and apartments and more single-family lots of city size rather than rural estate size.

The significant environmental effects of the land use management/development controls include:

- o effects on water quality and quantity (adverse and beneficial)
- o effects on physical resources (adverse and beneficial)
- o effects on energy consumption
- o effects on amenities

Water Quality

The land use management/development controls call for development to take place in existing urban areas, and areas with commitments for urban services. They would direct development away from areas lacking service commitments and from environmentally sensitive areas.

Compact development in existing urban service areas would reduce regionwide increases in surface runoff pollution associated with construction activities and the conversion of previous surfaces (open land) to impervious surfaces (streets, highways, parking lots, rooftops). This reduction results from changes in recent development patterns whereby more and more land in outlying areas is developed as single-family detached units and local-serving development (e.g. streets, highways, commerce). Because less outlying

areas are developed under the compact growth scenario, less impervious surfaces are created. Increases in surface runoff from outlying areas would not be as great as projected.

The potential for surface runoff pollution of surface water supplies would decrease. The significant effects of surface runoff on water supplies include the siltation problems in reservoirs associated with erosion from construction activities in watersheds tributary to water supply reservoirs. Reduced erosion potential also reduces turbidity, algae blooms and oxygen depletion in streams, lakes and reservoirs. Those effects often result in impairment of beneficial uses of those waterbodies. Less suspended solids reduces the potential for chemical, pesticide and heavy metal binding and deposit in the region's streams, lakes, reservoirs and the Bay Delta System. Concentrations of these pollutants impair beneficial uses and may adversely effect aquatic organisms. Reduced erosion potential reduces the incidence of burial of aquatic bottom organisms and the potential for fish kills. An indirect benefit to the productivity of the aquatic community may result from the prevention of or reduced interference with photosynthesis.

Less development in outlying areas and conversion to impervious surfaces would reduce the potential for the introduction of heavy metals such as lead, oil and grease and litter and other debris to surface waters than could be expected if those areas developed. Heavy metals, oil and grease and litter and debris contributed by surface runoff are major contributors to pollution problems in the region's water bodies. These pollutants result in impaired beneficial uses such as water supply, water-contact recreation and recreational and commercial harvesting of the substantial shellfish resources of the Bay.

The watersheds most significantly affected by compact development are tributary to Stafford Lake near Novato, Calero Reservoir near San Jose and Stevens Creek Reservoir near Cupertino.

Development could be affected in watersheds tributary to San Pablo Reservoir near Orinda and Upper San Leandro Reservoir near Moraga. In four other watersheds tributary to water supply reservoirs, current local development policies already preclude urbanization. The land use management/development control policies would augment efforts to protect the water supplies in Briones Reservoir near Lafayette, Almaden and Guadalupe Reservoirs south of San Jose and Lexington Reservoir south of Los Gatos.

Development directed away from watersheds tributary to these water supplies would reduce the potential for adverse water quality effects in those reservoirs from surface runoff pollution.

Localized surface runoff volumes and pollutant concentrations in those volumes may increase in the urbanized areas of the region as a result of compact development. However, the concentrations of lead, grease and oil in urban runoff would decrease as reduced auto dependency and vehicle use associated with the compact growth scenario could effectively reduce the deposit of those pollutants on impervious surfaces.

Water Quantity

Residential water use in 1975 constituted approximately 32% of the total water consumed in the region. Outside water use constituted 31% of residential consumption in the same year. Compact development would not affect in-house residential water use. However, in the year 2000, a 3% savings in outside residential water use is projected for the compact growth scenario.

Effects on Physical Resources

Policy B recommends restricting development in areas lacking urban services and in areas of critical environmental concern. Areas of critical environmental concern include:

- o wetlands, marshes, estuaries
- o prime and other agricultural lands
- o mineral resource areas
- o areas with soil, slope and other site hazards
(seismic risk and flood prone areas)

Other resources of importance include land sites with special development potential (seaports, airports, marinas), recreation areas, historic and cultural resources, energy and amenities.

Adverse effects on physical resources may result from disruption or actual destruction associated with construction activities or changes in land use. Adverse effects can also occur when access to the resource is blocked or impaired. Adverse effects may additionally result from impaired use of the resources (e.g. water quality effects of surface runoff may adversely effect wildlife habitat areas, increases in carbon monoxide levels may adversely effect crop productivity and the viability of other plant species).

Wetlands, Marshes and Estuaries

Compact development supports efforts to protect critical environmental resources such as water-related habitat areas (salt and freshwater marshes, wetlands, coastal and delta estuaries). Areas not now close to urban development but that experience occasional development proposals include: Baylands of Contra Costa, Alameda and Santa Clara Counties; Suisun Marsh, Carquinez Straits, Delta areas of Solano and Contra Costa counties; North Bay, Petaluma and Napa River marshes and Coastal wetlands and estuaries in Sonoma, Marin and San Mateo counties. These critical environmental resources and the plant and animal species they support would benefit from decreased development pressures.

On the other hand, certain areas may experience increased development pressure as a result of compact development patterns. Examples where this could occur are the urban north coastal areas of San Mateo County and fringe areas of Richardson Bay and San Pablo Bay in Marin County.

Agricultural lands

The compact growth development pattern could have significant effects in reducing development of prime agricultural land. The main areas affected are in Napa, Solano and South Santa Clara counties. Approximately 9,000 acres would not be needed for development so that prime agricultural land in those areas would benefit from reduced development pressures. Approximately 11,000 additional acres of land would also not be needed for development. Prime agricultural land is not a significant portion of that acreage although it does exist.

Development pressures would increase on approximately 3,000 acres of land. Pressure to develop prime agricultural lands could increase as a result of compact development in those areas. Two-thirds of this area lies in Sonoma County between Rohnert Park and Santa Rosa. This area is unique in that extensive areas outside those jurisdictions are already prime areas for development. The county approved development by subdividing the land a few years ago.

Compact development would contribute to hydrocarbon emission reductions. Compact development policies would account for about an 11% reduction in vehicle emissions by the year 2000. Thus, in addition to reducing the development pressure on agricultural lands, compact development would also contribute to reductions in the adverse biological effects on vegetation associated with oxidant levels. Decreases are expected in visible injury and discoloration of foliage, leaf drop, reduced plant vigor and growth and total plant loss.

Crops such as grapes and ornamental plants are specialty crops grown in few other parts of the country. They are an important component of the region's economy. They are some of the crops which evidence serious damage from oxidant levels that occur in the Bay Area. The crops would, therefore, presumably benefit from reduced hydrocarbon emission levels.

Mineral Resources, Geothermal Areas and Timber Producing and Other Forested Lands

Compact development would support current local development policies that do not propose these areas for development. While there are significant extractive resources in the region (Richmond/San Pablo, Hayward, Fremont, North bay locations remote from urban areas), compact growth would increase development pressures in only two areas--Fremont and Hayward.

Soils, Slopes and Other Site Hazard Areas

The compact growth policies would concentrate development in some cities where proximity to earthquake fault zones could be a problem. The most significant added concentrations of new housing would occur in the following jurisdictions, all of which allow development in relatively unstable areas but have adopted the 1973 and 1976 Uniform Building Code that accounts for such hazards: Oakland, Daly City, Millbrae, San Mateo and Mountain View.

Housing development in San Jose would be encouraged in areas that would be stable, in other words directed away from earthquake hazard areas.

The effects of compact development in the flood prone areas of 95 jurisdictions (including unincorporated communities) were examined. Significant shifts away from such hazardous areas were noted in about $\frac{1}{4}$ of those jurisdictions. Compact development appeared to have less effect or none at all in about 2/3 of the jurisdictions. In or near five of the jurisdictions examined, compact development could influence pressures for development in flood prone areas. These five are Dixon, Concord, Petaluma, Rohnert Park and Sonoma.

Significant development pressures could be shifted away from unstable slope areas in about 1/3 of 95 jurisdictions examined for compact development effects. Examples where this could occur are in Marin and Contra Costa counties. Development pressures in areas with unstable slopes could increase in Fremont, El Cerrito and to a small degree in or near Cloverdale and Santa Rosa in Sonoma County.

Land Sites with Special Development Potential

Land sites with special development potential include lands uniquely suited for seaport, airport, marina or energy-site development. Potential public project sites could be affected by increased pressures on the site and on adjacent lands. Alteration may occur in the type or intensity of development in the vicinity from what was the basis of design for the facility.

Vacant land in the vicinity of airports may become more attractive for land uses not compatible with airports. Highrise developments near airports are not likely effects of compact growth. However, increased growth in the bayside areas of San Mateo and Alameda counties may result in more people living and working near the airports in those areas and in greater commercial growth to serve the additional growth. The commercial development could compete with airport related industrial development. This would be a potential problem for the south bay airports.

Recreation Areas

As a result of policies directing development away from areas lacking urban services, compact growth could improve the potential for land in outlying areas to be developed as recreation areas. The opposite effect could occur in urbanized areas as compact development could reduce the land available for development of recreation facilities.

Historic and Cultural Resources

The Bay Area is rich in historic and cultural resources. The 818 designated historical sites are concentrated in the urban counties. These counties would experience increased growth (as a result of compact development) with potential pressures for development on or adjacent to historical sites in those areas. More than two-thirds of the historical sites are in San Francisco, Alameda, San Mateo and Santa Clara counties, where compact development would concentrate over 2/3 of the housing development in the next 25 years.

There are more than 2,000 designated archaeological sites in the region. They are not distributed in a manner that would result in their being threatened by urbanization. About 2/3 of the sites are in the less urbanized portions of the North Bay, in the counties of Marin, Sonoma, Napa, and Solano. Compact development proposals to concentrate development in or near existing smaller cities should protect the archaeological sites from development pressures or at least not adversely effect protection of the sites.

Energy

The compact growth policies are premised on reductions in hydrocarbon emissions possible through reductions in vehicle use and vehicle miles traveled. As a result of the reduced vehicle miles traveled, 3.6 million equivalent barrels of oil per year would be saved through compact development. A 20% increase in transit use in 1985 would consume 88,000 equivalent barrels of oil per year or a 20% increase in transit fuel consumption over current use.

The residential savings in energy consumption associated with compact development patterns cannot be estimated in quantitative terms with a high degree of accuracy. While it would appear that the type of housing (townhouse, cluster development, apartments) encouraged by the compact growth policies would be less energy consumptive many intervening variables are often more limiting than type and density factors. For example, it seems logical to assume that townhouses, condominiums, and apartment buildings would use less energy (both as a function of thermal response of heat in multiple stories and common walls) than conventional detached single family residences (especially single-floor homes with large square footage). However, the energy required to heat a structure is more a function of factors such as structural material, design, insulation materials, climatic zone, orientation to the wind, and amount of glass. In addition, while heating fuel may be less for more than a single floor residence, the reduction may be offset by cooling requirements at other times of the year.

Amenities

A major effect of the compact growth scenario is the effect on regional scenic amenities as development would be directed away from suburban and rural ridgeland, scenic valleys and the coastal areas of the region. Many communities in Marin, San Mateo, and the East Bay have taken actions to preserve suburban ridgeland. Local efforts taken in Napa county to contain urbanization to close-in areas of the valley cities so as to preserve the unique scenic rural valleys would also be supported by compact development. Other areas such as Suisun Marsh, the rolling hills of West Marin and the agricultural area of East Contra Costa would experience less development pressure. The suburban ridgeland of the East and South Bay, where urban development pressures are imminent, could be preserved by concerted multi-jurisdictional actions similar to those already taken in Santa Clara County. Local government actions consistent with compact growth would discourage coastal area development well beyond the limited jurisdictional boundaries of the Coastal Commissions. While higher density

development would occur near the bay, it would be beyond the area subject to the Bay Conservation and Development Commission's jurisdiction.

ANY SIGNIFICANT ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED IF THE PROPOSAL IS IMPLEMENTED AND MITIGATION MEASURES PROPOSED TO MINIMIZE THE SIGNIFICANT EFFECTS

The potential for significant (adverse) environmental effects of policies in the AQMP is associated with stationary source controls and the land use management/development controls.

Stationary Source Controls

The potential significant (adverse) environmental effect of certain stationary source controls is their energy consumptive qualities. Controls of this nature are the water based coatings and solvent concentration reduction controls. This effect of those controls can be offset against the opposite effects of other stationary source controls (e.g. high solids coatings and improved vapor recovery systems). In addition, the significant energy savings of other elements of the AQMP (vehicle emission controls, transportation controls and land use management/development controls) would minimize the consumption effects of these stationary sources on total energy use.

Land Use Management/Development Controls

The potential for significant (adverse) environmental effects of the land use management/development controls are associated with effects on water quality and physical resources.

Water Quality

As discussed under the heading, "Significant Environmental Effects of the Proposed Project," compact development policies in areas with commitments for urban services could result in localized increases in surface runoff. The recommendations for surface runoff controls in the Water Quality Management Plan (Policy 8) would minimize these potentially adverse effects of compact development. The street sweeping, litter control, storm drainage system cleaning, dumping controls and oil recycling, erosion control, chemical control and street repair actions recommended to implement Policy 8 would ensure that as development occurs continued efforts by local governments would mitigate the potential problems. In addition, the reductions in vehicle miles traveled affected through the vehicle emission controls and transportation controls (as well as the land use management/development controls) would reduce the amounts of lead and oil and grease deposited on streets and highways and available for wash off during storms.

Physical Resources: Wetlands, Marshes, Estuaries

Critical environmental areas may experience increased development pressures. Those areas include the urban North Coastal areas of San Mateo County and the fringe areas of Richardson Bay and San Pablo Bay in Marin County. These effects can be mitigated by the application of local development policies and actions such as: general plans, conditional use permits, and zoning. The regulatory authorities of the Coastal Commissions and the Bay Conserva-

Conservation and Development Commission could also serve to mitigate these effects.

Agricultural Lands

Agricultural lands which may experience increased development pressures lie between Rohnert Park and Santa Rosa. The county has already taken actions which would allow development in these areas by subdividing the land.

Mineral Resources, Geothermal Areas and Timber-Producing and Other Forested Lands

Compact development would tend to increase development pressures in two areas with significant mineral resources--Fremont and Hayward. In both cases, the cities have special regulations that protect quarrying operations.

Soils, Slopes and Other Site Hazards

The 1973 and 1976 Uniform Building Codes adopted by Oakland, Daly City, Millbrae, San Mateo and Mountain View would minimize the potential harm due to development pressures in seismic risk areas of these communities.

Flood plain zoning actions by local governments could mitigate pressures for development in flood hazard areas. Uniform building codes could mitigate the effects of development pressures on unstable slope areas.

Land Sites with Special Development Potential

Local government development policies and planning actions could be used to ensure that development in seaport and airport areas is compatible with those uses. Those authorities could also minimize the development pressures on potential sites selected for future development as seaports and airports.

Recreation Areas

Local development policies and actions could mitigate the development pressures on lands in urbanized areas identified for recreational facility development. Those policies could also reserve parcels to obviate the potential scarcity of land for recreational uses, as development of by-passed parcels for other land uses occurs. State and Federal government agencies (e.g. California Department of Parks and Recreation, U.S. Department of the Interior, Bureau of Outdoor Recreation) have emphasized urban parks and recreation facilities during the past several years. Continued Federal and State grant subventions would augment local government efforts to provide "in-town" recreational opportunities as the urban populations increase.

Historic and Cultural Resources

Substantial development will occur in San Francisco, Alameda, San Mateo and Santa Clara Counties under the compact growth scenario. These counties have over 2/3 of the historical sites in the region. Local government development policies and actions such as general plans, zoning and establishment of historic preservation districts could mitigate the development pressures on historic sites.

ALTERNATIVES TO THE PROPOSED ACTION

The No Action Alternative to the Air Quality Maintenance Plan

The major alternative to the Air Quality Maintenance Plan in its entirety is one of no action. The no action alternative is not feasible. The Clean Air Act Amendments of 1970 and 1977 require each state to prepare state implementation plans for how ambient air quality standards will be met. For various reasons a completely acceptable plan for the Bay Area has never been adopted.

ABAG was designated the areawide waste treatment management planning agency (under the authorities of Section 208 of the FWPC Act Amendments). The California Air Resource Board and the U.S EPA designated ABAG as the Bay Area lead agency to prepare an Air Quality Maintenance Plan. Preparation of the AQMP by the same agency preparing the areawide waste treatment management plan and the solid waste management plan would ensure that the inter-related issues associated with managing air, water and solid waste would be addressed.

The 1977 amendments to the Clean Air Act require the State implementation plans to show attainment of air quality standards by 1982, or at the latest 1987, and continued maintenance once attained. Thus the no action alternative was not feasible.

Alternatives to the Stationary Source Controls, Mobile Source Controls and Transportation Controls

Section 5 of Chapter VI of Volume I of the Draft EMP is titled "Alternative Solutions." That section describes in some detail the process and rationale used in developing the proposed AQMP. A large number of alternatives or options were considered. Alternatives considered but not included in the plan are shown in Table 3 (transportation controls included in the plan are also shown in the table).

Alternatives to the Land Use Management/Development Controls

The major alternative to the land use management/development controls is no action. The land use management/development controls are an integral part of the AQMP comprehensive strategy. A comprehensive strategy can achieve and maintain the Federal oxidant standard. Without a comprehensive strategy, including land use management development controls, the standard may not be met by 1985-87 (as required by the Clean Air Act Amendments of 1977) and maintained thereafter. The comprehensive strategy also provides the flexibility required to account for additional monitoring data that could suggest the need for more or less stringent programs.

Alternative Institutional Arrangement for Implementation

Alternative institutional arrangements for implementing the AQMP are not feasible. The Clean Air Act Amendment of 1977 require that adequate regulatory authority exist to implement the plan. Adequate authorities currently exist to implement the plan. The California Air Resources Board, The Bay Area Air Pollution Control Board, California Department of Transportation, Metropoli-

TABLE 3-A

TABLE 3 - ALTERNATIVES TO AIR QUALITY RECOMMENDATIONS OF THE EMP

RECOMMENDATION	DESCRIPTION	EST. HYDROCARBON EMISSION REDUCTIONS (Tons/Day)		BASIS FOR ESTIMATE	COMMENTS AND SCREENING RATIONALE
		1985	2000		
1. Enact new maximum SO ₂ emission of 300 ppm.	Affects sulfur recovery, sulfuric acid plants and combustion operations burning fuel oil, etc.	0	0	BAAPCD Engineering Estimate	Deferred for closer examination in the continuing planning process (CPP); this program is directed at controlling SO ₂ .
2. Reduce fuel sulfur content to 0.25%.	Affects sulfur recovery sulfuric acid plants and combustion operations burning fuel oil, etc.	0	0	BAAPCD Engineering Estimate	Deferred for closer examination in the continuing planning process (CPP); this program is directed at controlling SO ₂ .
3. Adopt NO _x controls for non-highway and construction equipment.	Primarily modifications on agricultural tractors, construction equipment, steamships, locomotives and two cycle engines.	0	0	BAAPCD Engineering Estimate	Possible conflict with the proposed oxidant control strategy. Requires closer examination.
4. Adopt NO _x limits for all new boilers.	Long term (15 to 30 years) program to require a new NO _x limit on boilers < 250 million BTU/hr. rating.	0	0	BAAPCD Engineering Estimate	Possible conflict with the proposed oxidant control strategy. Requires closer examination.
5. Adopt lower particulate loading - 0.1 to 0.05 gr/SCFM.	Primarily a change from any cyclone control to BAG House or Electrostatic Precipitator on 1000's of small operations.	0	0	BAAPCD Engineering Estimate	Deferred for closer examination in the CPP, this program is directed at controlling particulates.
6. Lower process weight allowance scale.	Less than 100 sources (e.g., Catalytic Crackers, Fluid Coking, Kilns and Fertilizer Plants) affected.	0	0	BAAPCD Engineering Estimate	Deferred for closer examination in the CPP, this program is directed at controlling particulates.
7. Lower process weight maximum.	Less than 100 sources (e.g., Catalytic Crackers, Fluid Coking, Kilns and Fertilizer Plants) affected.	0	0	BAAPCD Engineering Estimate	Deferred for closer examination in the CPP, this program is directed at controlling particulates.
8. Options 14-18 (Table 9) are all forms of BACT.	Best Available Technology with minor variations.	Very Significant		BAAPCD Engineering Estimate	Included in the AQMP (See Specific Proposals and Control Categories covered).

TABLE
3-B

RECOMMENDATION	DESCRIPTION	EST. HYDROCARBON EMISSION REDUCTIONS (Tons/Day)		BASIS FOR ESTIMATE	COMMENTS AND SCREENING RATIONALE
		1985	2000		
9. Options 19-27 are all forms of New Source Review.	Review of new or modified sources; many variations as described.	Significant	BAAPCD Engineering Estimate	Included in the AQMP (See Discussion in Chapter 7).	
10. Institute a comprehensive program to reduce energy use.	Efficient building heating and air conditioning, reduction of illumination & display lighting - promote heat recovery.	Not Significant	BAAPCD Engineering Estimate	Will reduce emissions but would be primarily fuel conservation measures; it is not significant as an organic control.	
11. Plant operation scheduling - (many options as described in Table 9).	Seasonal (day, week, month) scheduling including close attention to interruptable operations & staggering operations on 7 vs. 5 day/week.	Not Significant	BAAPCD Engineering Estimate	Generally difficult due to social-economic factors and not a factor in reducing organic emissions. Does not conform with Federal and State approach of <u>continuous, positive emission reduction program</u> .	
12. Air monitoring combined with meteorological analysis.	Approach relies on accurately predicting problems and implementing needed controls.	Not Significant	BAAPCD Engineering Estimate	Isolates air pollution problems--not significant in organic emission control. Again, is not a continuous, positive emission reduction program.	
13. Adopt particulate regulation based on particle size.	Self explanatory.	0	0	BAAPCD Engineering Estimate	No effect on organic emissions (particulate control proposal).
14. Replace throw-away container with reusable containers.	Self explanatory.	0	0	BAAPCD Engineering Estimate	No appreciable effect on organic emissions.
15. Burn Solid Waste near point of generation to reduce long hauls.	Self explanatory.	Not Significant	BAAPCD Engineering Estimate	Not a significant source of organic emissions; low potential benefits.	
16. Apply 1309. with modified trade-off of 134 & 1311.2.	New Source Review with clearly defined variations.	Significant	BAAPCD Engineering Estimate	NSR Rule included in AQMP.	

TABLE 3-C

RECOMMENDATION	DESCRIPTION	EST. HYDROCARBON EMISSION REDUCTIONS (Tons/Day)		BASIS FOR ESTIMATE	COMMENTS AND SCREENING RATIONALE
		1985	2000		
17. Require some sort of retrofitting on older plants.	Applies BACT to newer plants plus retrofit of existing plants on a time schedule.	Significant		BAAPCD Engineering Estimate	Included in AQMP as NSR and BACT. Reducing emissions in this manner and permit additional growth in region.
18. Penalty charge or tax based on amount of emission to encourage reductions.	Emission charge for contaminants to effect industrial control changes to BACT.	Not Significant		BAAPCD Engineering Estimate	Open to charge that large companies can buy emission allowance.
19. Lowering the Reid Vapor Press of gasoline to reduce hydrocarbon emissions from storage & handling vehicle.	Affects ~ 4 million vehicles, 6000 service stations, 60 bulk plants and all refineries & some chemical plants.	30	35	BAAPCD Engineering Estimate	An ongoing American Petroleum Institute study indicates that this option is not viable. When formal report is available, this option should be re-examined.

TABLE 3-D

RECOMMENDATION	DESCRIPTION	EST. HYDROCARBON EMISSION REDUCTIONS (Tons/Day)		BASIS FOR ESTIMATE	COMMENTS AND SCREENING RATIONALE
		1985	2000		
o Implement an evaporative emissions retrofit program for all vehicles, and/or recommend catalytic retrofit program for post '71 vehicles able to operate on unleaded gasoline.	Retrofit programs consist of the addition of a new item, or the modification or removal of an existing item of equipment on a vehicle after its initial manufacture. In the Bay Area all non-exempt vehicles undergoing change-of-ownership or initial registration require the installation of: (1) An NO _x control device for '66-'70 models. (2) An exhaust emission control device for '55-'65 models. (3) A crankcase emission control device for '55-'62 models. There have been no further developments of any retrofit programs to date.			Reductions from evaporative retrofit programs assume that a 25% reduction can be attained from pre-1980 vehicles. Reductions from catalyst programs assume 50% reduction can be attained by retrofitting non-catalyst vehicles. There would be no benefits by 2000 because the affected vehicles will have been retired.	Retrofit programs become less effective as old pre-controlled cars are retired. Thus, this is a short term measure. By 1975 the pre-catalyst vehicles (1971-1975) and pre-2gm/test vehicle (i.e., pre-1980) will only represent about 2% and 20%, respectively, of the total vehicle miles travelled. Since these percentages decrease rapidly thereafter the high cost and the short term benefit of this program does not appear to warrant it.
<u>Type of Retrofit Program</u>					
	Evaporative Catalyst	~ 4 ~ 6	Not Applicable		
o More stringent certification of compliance procedures.	New vehicles from each engine family are randomly selected from the manufacturers and tested for their emission characteristics by the CARB. More rigorous certification testing procedures could be employed to reduce maintenance requirements of engine components which influence emissions or, where possible, eliminate this maintenance completely. More stringent warranty conditions on emission control systems could also be utilized.	-	-	The air quality benefits could be assumed to be the same as those reductions shown for the motor vehicle inspection program in 2000. This measure could not be feasibly implemented by 1985.	This measure could eventually replace the need for a Motor Vehicle Inspection Program (MVIP). The new technology that would be required to satisfy this control measure would take years to develop. Since this time frame is not known, it was decided to keep MVIP through the year 2000.

TABLE 3-E

RECOMMENDATION	DESCRIPTION	EST. HYDROCARBON EMISSION REDUCTIONS (Tons/Day)		BASIS FOR ESTIMATE	COMMENTS AND SCREENING RATIONALE
		1985	2000		
(Continuation of previous Recommendation)	CARB has recently adopted regulations in certification test procedures for 1980 and later model vehicles that will require manufacturers of vehicles to make carburetors almost tamper-proof. This measure would recommend more stringent certification requirements which would promote changes in vehicle designs to minimize the need for maintenance and the possibility of tampering.				
o Adopt a more comprehensive new motor vehicle surveillance program.	Currently, all production vehicles are checked at the end of the assembly line to ensure that the emission control systems are properly installed and functional. The manufacturer also tests 2% of all vehicles using prescribed Federal test procedures. ARB staff periodically examine the manufacturers' quality control facilities. In addition, all new vehicles at dealerships and preparation centers are spot-checked. Title 13 of the California Administrative Code gives ARB the power to implement standards for engine setting tolerances, idle emissions and inspections of control systems to which new and used vehicles must conform as a condition of sale.	0	0	The benefits of this program are assumed to be achieved by the proposed Motor Vehicle Inspection Program (MVIP).	Since all newly acquired vehicles must be registered with the Department of Motor Vehicles, these vehicles could be required to satisfy MVIP requirements before such registration. Thus, it is assumed that the MVIP would eliminate the need to step-up this existing program.
	Cross-check testing could be randomly performed on production vehicles currently being tested by the manufacturers. Dealership inspections could be ex-				

RECOMMENDATION	DESCRIPTION	EST. HYDROCARBON EMISSION REDUCTIONS (Tons/Day)		BASIS FOR ESTIMATE	COMMENTS AND SCREENING RATIONALE			
		1985	2000					
<u>I. MEASURES TO IMPROVE TRAFFIC OPERATIONS</u>								
A. IMPROVE TRAFFIC FLOW								
		This general class of controls is designed to improve air quality by smoothing the flow of traffic. Since certain emissions increase due to "stop and go" traffic conditions, smoothing traffic flow would help reduce overall emissions. Traffic flow improvements are particularly suited to alleviating carbon monoxide problems. However, because of increasingly stringent motor vehicle emission standards for new cars, CO is not expected to be a long-term regional problem in the Bay Area, although local "hot-spots" may surface. These can be dealt with on an individual basis.						
1. Computerized Traffic Control	Traffic flow would be improved through a system of computerized traffic signals on selected arterial streets.	Negligible	-	Emissions vs. Speed Curves	This measure was dropped early in the analysis because only very small reductions in oxidant precursors would be achieved through speed improvements, especially considering the small portion of regional traffic that would be affected. Also, the improved flow might induce additional travel, which would offset any gains in air quality. A quantitative assessment was not conducted.			
2. Ramp Metering	Ramp metering is an effective operational tool which can, under appropriate conditions, promote optimum use of a transportation corridor. Its use also tends to improve air quality in two ways: 1) by improving the flow of traffic and 2) by providing bus bypass lanes at ramps with queues of traffic and thus a time saving to those using buses, which tends to encourage a modal shift. However, if congestion on a freeway is eliminated, there is the possibility that, in the absence of any other land use or transportation actions, additional long-distance trips could be generated.	(See measure for Bus/Carpool lanes)			<p>This measure has been combined with bus and carpool lanes because of possible travel-inducing effects if it were implemented alone.</p> <p>This measure has been recommended for inclusion in the draft AQMP. More details may be found in the recommended strategies summaries.</p>			

TABLE 3-H

TABLE 3-I

RECOMMENDATION	DESCRIPTION	EST. HYDROCARBON EMISSION REDUCTIONS (Tons/Day)		BASIS FOR ESTIMATE	COMMENTS AND SCREENING RATIONALE
		1985	2000		
3. Traffic Engineering Improvements	Traffic flow can be improved by a number of small projects which would redesign intersections or small street segments. However, if overall capacity were increased, and more trips generated, there could be a negative air quality effect.	Negligible	-	Emissions vs. Speed Curves	This measure was dropped in the first screening because it would affect only a small portion of travel, and any air quality effects would likely be insignificant. A quantitative analysis was not conducted.
4. Off-Street Freight Loading	Zoning regulations would specify off-street freight handling, which would improve traffic flow and hence air quality.	Negligible	-	Emissions vs. Speed Curves	The improved flow would have very little effect on oxidant precursors. Thus this measure was dropped in the initial screening without qualification.

B. REDUCE PEAK PERIOD TRAFFIC VOLUMES

Much of the peak oxidant problem can be traced to emissions generated during the morning hours. This is due to the time required for photochemical reactions to take place. Any reduction or spreading of these early morning emissions could possibly reduce the intensity or shift the location of peak oxidant concentrations. However, current knowledge of oxidant formation indicates that a very large shift in time would be required and moreover the measures in this category would be difficult to implement to the degree necessary to have this significant effect.

1. Staggered Work Hours	This program would shift the daily work schedule so that all employees would not arrive and leave at the same time. This could take the form of "staggered hours," where subgroups of a total work force operate on a fixed schedule, or "flex-time," where employees are given the option of determining their own hours within certain limits. This measure could improve air quality by a) reducing congestion, b) spreading early morning emissions, and c) providing employees with an opportunity to adjust their schedules to accommodate other modes of travel.	Negligible	-	Previous studies and MTC staff judgement	This measure was eliminated at the initial screening because it would redistribute auto trips, rather than eliminate them. Although the air quality benefits would be slight, it may be desirable to implement this strategy for other reasons, such as reduction in congestion.
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TABLE 3-J

RECOMMENDATION	DESCRIPTION	EST. HYDROCARBON EMISSION REDUCTIONS (Tons/Day)		BASIS FOR ESTIMATE	COMMENTS AND SCREENING RATIONALE
		1985	2000		
2. Four Day Work Week	The standard work week would be shortened to four days, with the work day lengthened and/or the weekly hours worked shortened. One-fifth of the commute travel could be eliminated, but the additional leisure time would probably generate other recreational or shopping trips.	Negligible	- Previous studies and MTC staff judgement	Because of the potential for additional trips, it was felt that this measure would have only a small effect on air quality, and it was therefore eliminated during the initial screening.	
3. Off-Peak Freight Delivery	Freight deliveries would be prohibited during peak periods. This would both reduce peak period traffic and also improve traffic flow by removing the slower vehicles and the trucks stopped while loading.	Negligible	- Previous studies and MTC staff judgement	Only a small percentage of regional travel would be affected by this measure, and so any air quality improvement would be virtually undetectable. This measure was therefore dropped from further consideration during the initial screening.	

II. MEASURES TO REDUCE VEHICLE USE

A. MEASURES TO RESTRICT VEHICLE OWNERSHIP

This strategy is designed to reduce travel by limiting the number of vehicles.

1. Additional License Fee.	This measure could take a number of forms. It could be a tax increase on all cars, or one which would put a progressively heavier tax on the more polluting cars. Another alternative would be to tax second or third cars in a household and so reduce mobility.	Negligible	- Previous studies and MTC Staff judgement	Although this measure is appealing from an implementation standpoint, at least one study* has indicated that an annual fee would not be a significant factor in a decision to own or drive a car, unless the fee was extremely high. This measure was thus dropped in the initial screening.
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*R.H. Pratt Associates, Inc., "Transportation Controls for Air Quality Improvements in the National Capitol Region," October 1976.

TABLE
3-K

RECOMMENDATION	DESCRIPTION	EST. HYDROCARBON EMISSION REDUCTIONS (Tons/Day)		BASIS FOR ESTIMATE	COMMENTS AND SCREENING RATIONALE
		1985	2000		
2. Registration Limits.	Instead of taxing vehicles with higher pollution potential, this measure would set limits on the numbers of such vehicles which could be registered. The EPA promulgated TCP proposed a ceiling on motorcycle registrations, but this measure was dropped in final version.	Negligible	Previous studies and MTC Staff judgement	The implementation and equity problems of this measure are formidable. Because of this, the program could not be set up at a scale which would have a significant effect on air quality. This measure was eliminated during the initial screening.	
B. MANAGEMENT OF AUTO ACCESS					
This strategy would discourage auto use by restricting the areas where autos can travel or park.					
1. Better Enforcement of Parking Regulations.	There are many current parking regulations which, if enforced, could discourage certain auto trips. Notable among these are the restrictions on long-term parking which could persuade some commuters to take transit. Other actions, such as enforcement of truck loading zones, could result in a smoother flow of traffic.	Negligible	MTC staff judgment	Because staff believed that the current number of violators was relatively low, the resultant effect in air quality would be small. However, this measure could be effective in jurisdictions where enforcement is currently lax. The measure was eliminated during the initial screening.	
2. Limit Number of Parking Spaces.	The intent of this measure is to reduce the available parking and so limit the number of autos which can effectively use the controlled area. There are two implementation options: (a) limit the construction of new parking facilities, and (b) cut back the number of parking spaces already available.	~ 0.4 *	Travel Model Analysis	The effect of freezing parking in the CBD's was investigated. Although this measure is effective, it was not included because of the potential for inequity between the large downtown areas and the smaller cities. However, it does remain a possible option.	
3. Prohibit On-Street Parking During Peak Hours.	This measure is designed to improve air quality primarily by improving the flow of traffic. It also serves to discourage certain trips since it limits the available parking.	Negligible	MTC staff judgment	This measure was not pursued since it is currently practiced by the major cities in their CBD's.	

TABLE 3-L

RECOMMENDATION	DESCRIPTION	EST. HYDROCARBON EMISSION REDUCTIONS (Tons/Day)		BASIS FOR ESTIMATE	COMMENTS AND SCREENING RATIONALE
		1985	2000		
4. Area License	A special license would be required to bring a car into certain designated areas. This would encourage a shift to other modes.	Variable	Previous studies and MTC staff judgement	In the past few years there has been increased interest throughout the world in the possibility of imposing user charges to discourage automobile travel in major urban areas. Singapore instituted a program which has been successful but no cities in Europe or North America have tried this concept. A similar type of program was under discussion in Berkeley but was not pursued. Although congestion pricing would certainly be effective in reducing auto-related emissions, this measure was eliminated during the initial screening because of equity problems, implementation problems and public acceptability. It was felt that a similar effect could be obtained, at least in the CBD's, by increasing long-term parking rates.	
5. Auto Free Zones	This measure involves the designation of areas within a city (e.g., CBD's where vehicles are prohibited, with the exception of buses, taxis, and emergency vehicles). This technique can result in an improved pedestrian environment and would encourage people to use transit for the entire trip. To develop traffic, necessary freight movements, improved transit access, and, in some cases, parking structures on the fringes. This concept has proved successful in a number of cities, most in Europe. In the U.S., the major examples of such zones have been shopping malls.	~ 0.1	*	Travel Model Analysis	An area within the San Francisco CBD was analyzed as a potential auto control zone. This roughly corresponds to the area recommended in the revisions to the Transportation Element of the San Francisco General plan. [†] This measure is recommended for implementation in San Francisco. The experience gained in this project will determine its potential for other areas in the region. A more detailed description of this measure may be found in the recommended strategy summaries.

[†] Adopted by the San Francisco City Planning Commission, Resolution No. 7657, January 20, 1977.

TABLE 3-M

RECOMMENDATION	DESCRIPTION	EST. HYDROCARBON EMISSION REDUCTIONS (Tons/Day)		BASIS FOR ESTIMATE	COMMENTS AND SCREENING RATIONALE
		1985	2000		
6. Gas Rationing	This is generally considered the "ultimate" measure. The supply of gasoline is limited in an effort to cut travel and thus pollutant emissions. This measure would have significant administrative problems.	Variable	Joint Technical Staff estimate	This measure was not considered for inclusion in the draft AQMP because of the significant administrative problems and public acceptance problems which would surface. Overall fuel rationing has been suggested as an alternative to gas rationing in an effort to spread the burden over all segments of the economy. It should be noted that since autos will constitute only 15% of regional hydrocarbon emissions in 1985, a 20 percent cutback in gasoline availability would reduce regional hydrocarbon emissions by approximately 23 tons.	

C. MEASURES TO INCREASE COST OF AUTO USE

Another way of discouraging auto use is to increase the cost of auto commuting relative to transit or carpooling. However, it generally takes a fairly large increase to effect a significant shift to transit. The more effective pricing strategies are those which serve as daily visible reminders of the real costs of auto commuting.

RECOMMENDATION	DESCRIPTION	EST. HYDROCARBON EMISSION REDUCTIONS (Tons/Day)		BASIS FOR ESTIMATE	COMMENTS AND SCREENING RATIONALE
		1985	2000		
1. Road Pricing Techniques	This measure could be implemented in two distinct ways. In one, a fee would be charged for the use of certain roads. This is similar to a toll, except that it is more widespread and would likely not be collected at a tollbooth. Instead, some system of in-car meters or electronic scanning devices might be used as automatic billing devices. The second form is a congestion toll, where the rates would increase with the level of congestion.	Negligible	Previous studies and MTC staff judgement		These measures have not yet been tried as air quality strategies. The technology is not readily available for the first and the second is still fairly new and untested. For this reason, and because of problems in public acceptability, this measure was dropped in the initial screening. The discussion included under measure B(4) is also applicable to this measure.
2. Increased Parking Costs	The purpose of this measure would be to discourage auto use by increasing the overall commute cost via additional parking charges. A special parking tax of 35 percent, to be levied on all vehicles parking between 6 and 10 a.m., has been proposed.	~ 0.3	*	Travel Model Analysis	The 6-9 a.m. period was selected to minimize the additional burden on those driving for non-work purposes. This measure has been recommended for implementation. Additional information is contained in the recommended strategy summaries.
3. Minimum Parking Fee at Large Shopping Center	Most of the measures that were considered focused on the work trip. Other trips, such as shopping, are important in the formation of air pollution but are not as susceptible to diversion to transit. However, many of these trips are made to purchase only one or two items. If the shopper were to consolidate these single trips	See Description and Comments			Staff was unable to quantify the effectiveness of this measure because of the lack of experience with this type of action. However, we estimate that shopping trips in 1985 will generate 53 tons of HC, 826 tons of CO, and 39 tons of NOx daily. This is significant, and therefore this measure was recommended.

TABLE 3-N

TABLE 3-0

RECOMMENDATION	DESCRIPTION	EST. HYDROCARBON EMISSION REDUCTIONS (Tons/Day)		BASIS FOR ESTIMATE	COMMENTS AND SCREENING RATIONALE
		1985	2000		
(Continuation of previous Recommendation)	into one or two weekly trips, the air quality effect could be important. To encourage this consolidation of trips, a minimum 50¢ parking fee at shopping centers that maintain over 500 parking spaces was proposed.				
4. Eliminate Free Employee Parking	Employers located outside the CBD's virtually always provide their employees with free parking. To encourage these employees to shift to transit or carpools, this measure specifies a \$1.00 parking fee be levied at all employee lots of 500 or more spaces.	~ 0.9	*	Travel Model Analysis	Although these reductions are relatively high, it was felt that the current lack of transit access to many industrial areas would be a hardship. Therefore, this measure is not recommended at this time.
5. Additional Gasoline Tax	The gas tax would be raised to reduce the demand for vehicular travel. The extra revenue would be used to finance transit improvements or other non-auto alternatives. Unfortunately, the energy crisis of 1974 demonstrated that, even with a rather large increase in cost, the use of autos did not decrease significantly. This experience showed that a 10% increase in pump price facing the consumer would cut the demand probably 1.5%. In the long run, the application of this measure would probably produce a shift toward smaller, more fuel-efficient cars. The imposition of this measure raises questions of equity, since the poor and those not having access to transit would be penalized most severely.	< 0.1	-	Travel Model Analysis	A 15¢/gal increase in the gas tax would reduce HC emissions in 1985 by less than 0.1 ton/day. The CO reduction was 0.8 tons/day with NOx reduced less than 0.1 ton/day. This measure was eliminated during the secondary screening.

TABLE 3-P

RECOMMENDATION	DESCRIPTION	EST. HYDROCARBON EMISSION REDUCTIONS (Tons/Day)		BASIS FOR ESTIMATE	COMMENTS AND SCREENING RATIONALE
		1985	2000		
6. Increased Tolls.	Bridge tolls would be increased to reduce the volume of autos using the facility and to generate revenue which could be used to finance improvements in the transit system. MTC was recently given authority over the level and use of tolls on the trans-bay bridges. Tolls on the Bay, San Mateo, and Dumbarton bridges were recently raised to 75¢. The Golden Gate Bridge District has just adopted a \$1.00 toll.	~ 0.2	*	Travel Model Analysis	A peak toll of \$1.25, with an off-peak toll of \$1.00, would reduce HC by 0.2 tons/day, CO by 3.1, and NO _x by 0.2 (1985 emissions). In addition, over \$12 million additional revenues would be generated annually, which could be used for transit improvements. This measure is therefore recommended.
7. "Smog Charges."	This measure would assess an additional charge on the auto driver for the pollution generated by the automobile, thus encouraging a shift to other forms of transport or to less polluting cars. The implementation could be done through some of the measures already mentioned, such as the gas tax or registration fee, possibly accompanied by some rebate scheme for those autos with superior emissions control equipment.	Negligible	MTC staff judgment		The effectiveness of this measure was judged to be similar to that estimated for the additional gas tax. An extremely high charge was thought necessary to effect significant reductions in auto use - the measure was therefore eliminated during the secondary screening.

D. MEASURES TO REDUCE THE NEED TO TRAVEL

This strategy is designed to maximize or eliminate unnecessary travel. Unfortunately, the effectiveness and feasibility of these types of measures are uncertain.

TABLE 3-Q

RECOMMENDATION	DESCRIPTION	EST. HYDROCARBON EMISSION REDUCTIONS (Tons/Day)		BASIS FOR ESTIMATE	COMMENTS AND SCREENING RATIONALE
		1985	2000		
1. Communications Substitutes.	Certain trips could be eliminated by using other means of communication. This could include business trips as well as shopping trips. The technology for visual communications is becoming more available. However, the extent to which the public will adapt to these new systems is uncertain. The rapid growth in electronic communications in the past decade has not reduced the need to travel.	Uncertain, probably negligible		See comments	This measure was eliminated in the initial screening because its proven effectiveness in the near term is doubtful.
2. Goods Movement Consolidation.	This measure would reduce truck travel by consolidating freight deliveries. Basically, the concept is to have one terminal where the freight is delivered and sorted, and then small trucks would complete the delivery. The measure would thus decrease truck VMT and probably also reduce auto emissions as well by permitting a smoother traffic flow.	Negligible		MTC staff judgement	The effectiveness of this measure would be minimal because of the small percentage of travel that would be affected. The measure was thus dropped in the initial screening.

III. MEASURES TO ENCOURAGE ALTERNATIVE MODES OF TRAVEL

A. INCREASE TRANSIT RIDERSHIP

This set of measures would provide incentives for transit as an alternative transportation mode. For many commuters transit is a viable option, yet additional incentives need to be provided to induce significant diversion from the automobile. The following measures are designed to promote the transit mode.

TABLE 3-R

RECOMMENDATION	DESCRIPTION	EST. HYDROCARBON EMISSION REDUCTIONS (Tons/Day)		BASIS FOR ESTIMATE	COMMENTS AND SCREENING RATIONALE
		1985	2000		
1. Additional Transit Service	Increasing transit service would increase its availability, decrease the waiting time and in some cases the running time, and generally make transit more competitive with the auto.	~ 0.7	*	Travel Model Analysis	A 20% increase in transit operating service would reduce 1985 daily emissions significantly. This measure is therefore recommended for implementation.
2. Fare Reductions	There are a number of variations of this measure. One is to simply reduce or eliminate transit fares. This would probably not be very effective, since the fares throughout the Bay Area are already relatively low. A second option is some form of a monthly pass. This has good potential since it would eliminate the psychological impediment of repeated payments, and so would encourage the diversion of casual trips to transit. A related option is the coordination of transfers between systems.	Negligible		Previous Studies and MTC staff	Because of the current low fare level, further reductions could conflict with regional policy and potentially state law. The monthly pass would probably not have significant air quality effects, but may be a desirable mechanism for encouraging transit ridership.
3. Improved Transit Comfort	This measure seeks to reduce the differences between the auto and transit modes by improving the comfort of transit service. This would be done by providing shelters at bus stops, better security, more comfortable buses, or other amenities.	Negligible		MTC staff judgement	It is believed that improved amenities alone would not significantly influence transit demand. Moreover, most of the existing transit development programs in the Bay Area will involve new, comfortable buses, additional bus shelters and radio communication. Thus, this measure was dropped from consideration in the initial screening.

TABLE
3-S

RECOMMENDATION	DESCRIPTION	EST. HYDROCARBON EMISSION REDUCTIONS (Tons/Day)		BASIS FOR ESTIMATE	COMMENTS AND SCREENING RATIONALE
		1985	2000		
4. Bus and Carpool Lanes	Exclusive lanes for buses and carpools would be provided to give these vehicles a time advantage over single occupant autos. This measure is particularly effective at congestion bottlenecks. Experience in the Bay Area has shown that although the time saving is not large because the congested areas are short, buses have benefited since they are able to maintain more reliable schedules. Major examples of existing bus priority lanes in the Bay Area include Route 101 in Marin County, Route 280 in San Francisco, through the Bay Bridge Toll Plaza, and other points on freeways.	Bus Lanes Only	~ 0.1	Travel Model Analysis	Although these reductions are low, they could reinforce other measures, such as the additional transit service. Accordingly, they are recommended for implementation.
	Carpool Lanes Only		< 0.1		

B. ENCOURAGE THE PEDISTRIAN MODE

Provide Pedestrian Amenities

For short trips, walking is frequently the best alternative. Providing amenities such as wider pavements, or moving sidewalks between major activity centers can encourage people to walk for short trips.

Previous Studies and MTC staff judgement

A survey of previous studies indicated that, with the exception of auto-free zones, the provision of these amenities would not produce a significant shift from the auto. Rather, it is the dense land use pattern itself which generally encourages pedestrian activity. Since the auto-free zone was already included as a separate measure, we felt that the provision of these other amenities was not warranted from a strict air quality perspective.

C. ENCOURAGE THE BICYCLE MODE

Provide Bicycle Facilities

One strategy that could be particularly effective is the greater use of bicycles for the short utility trip and interface with transit on the commute trip. During the summer and fall months, the weather is ideal for cycling, and the daylight is long enough to provide sufficient time for such trips. A comprehensive network of bike lanes would encourage bicycle use. The two major deterrents to the extensive use of bicycles have been safety and theft. The first, as statistics bear out, could be greatly mitigated through education acknowledging the bicycle as a legitimate mode and requiring similar knowledge and qualifications for its use as now is required for drivers of cars. Safe parking for bikes, particularly lockers at transit transfer points, shopping centers and other places, is possible with minimal capital outlay (\$175 per locker vs. about \$5,000 per parking stall or structure) and would do much to stimulate bicycle utility trips.

~ 2.0 *

MTC Parking Management Plan Study

The effectiveness of this measure was estimated from previous work on Parking Management Plan for the Bay Area. Because this measure would affect all trips it has greater potential than many of the other measures which were aimed at the work trip only. We thus recommend implementation of this measure, to include both bike lanes and adequate storage facilities.

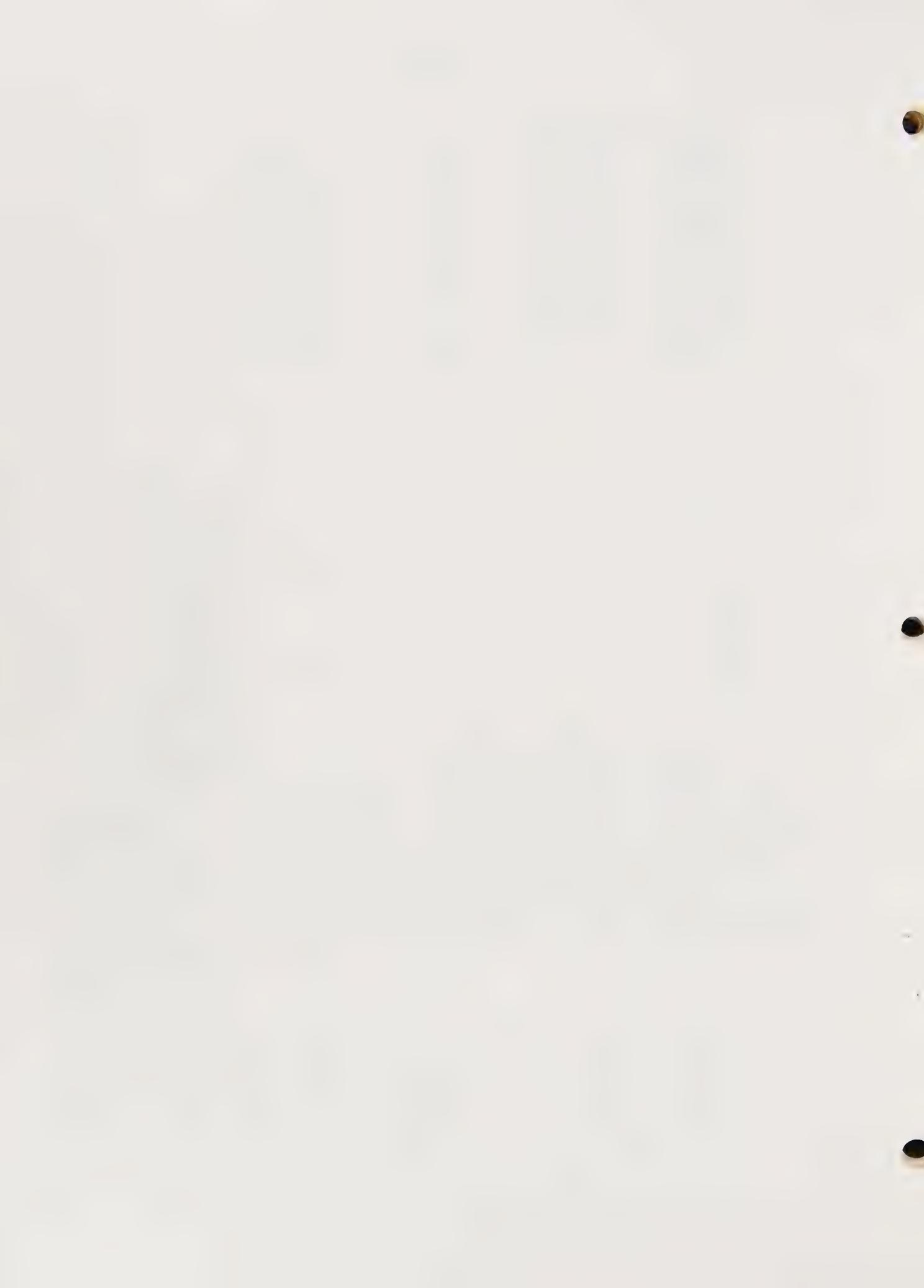
TABLE 3-T

RECOMMENDATION	DESCRIPTION	EST. HYDROCARBON EMISSION REDUCTIONS (Tons/Day)		BASIS FOR ESTIMATE	COMMENTS AND SCREENING RATIONALE			
		1985	2000					
D. MEASURES TO ENCOURAGE RIDE SHARING								
Carpooling has good potential as a strategy for reducing vehicle travel. It requires no new capital investment since the cars are already available. It can offer many amenities that transit cannot, such as door-to-door service. Finally, the cost savings are easily perceived by the individual riders.								
The following measures were considered.								
1. Toll Reduction for Carpools	One means of encouraging carpools is to reduce or eliminate the tolls on bridges or other toll facilities. Currently, the trans-bay bridges charge no tolls for carpools during peak hours. The Golden Gate Bridge also allows free passage of carpools.	Negligible	MTC staff judgment	Virtually all bridges now offer free passage to carpools during peak periods. Very little could be done to expand this measure, so it was eliminated during the screening process.				
2. Preferential Parking for Carpools	Special lots would be reserved for carpools which would offer an advantage in location and/or price. Caltrans is currently leasing state lots in San Francisco which will be available to carpools for no more than \$10/month. Other fringe parking lots are being planned which will aid in carpool pickups.	~ 0.1	*	Travel Model Analysis	Since this measure will reinforce other carpooling measures, it is recommended for implementation.			
3. Carpool Matching Information	These programs are oriented to providing assistance to those individuals interested in forming carpools. Caltrans currently administers a carpool matching program which seeks to match riders going to major employment centers. This could be expanded to include	~ 1.7	*	MTC staff judgment	A method of implementing this expanded scope through formation of a non-profit corporation is being considered. The effectiveness was estimated in conjunction with the following measure, vanpooling.			

TABLE 3-U

RECOMMENDATION	DESCRIPTION	EST. HYDROCARBON EMISSION REDUCTIONS (Tons/Day)		BASIS FOR ESTIMATE	COMMENTS AND SCREENING RATIONALE
		1985	2000		
	secondary employment centers and to solicit employer participation.				
4. Assist Vanpool Formation	Vanpooling has potential for replacing cars on the longer commute trips. The passengers pay the capital and operating costs of the van, and the driver is responsible for the operating and administrative aspects. A public entity can assist by matching interested participants, and by facilitating the purchase and insurance of the equipment.	1.7	*	MTC Staff Judgement	The same non-profit corporation is intended to encourage vanpooling by providing the stated services. The emissions reduction potential of this and the carpool matching program is significant. We therefore recommend both measures.

*The effectiveness of these measures was not estimated separately for the year 2000. They were combined with the compact development strategy for evaluation.



tan Transportation Commission, ABAG and other Regional and local governments can implement the actions recommended in the plan.

RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF MAN'S ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

The policies of the AQMP would have significant benefits for the maintenance and enhancement of long-term productivity. All four general policies involve actions that would result in substantial energy savings. The land-use management/development controls would protect many physical resources of the region.

ANY SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL CHANGES WHICH WOULD BE INVOLVED IN THE PROPOSED ACTION SHOULD IT BE IMPLEMENTED

The policies of the AQMP should not result in irreversible changes to the environment. Development will occur to accommodate the growth of the region's population and associated commercial, industrial and other local services. This would occur regardless of the land use management/development controls proposed. The effect of these policies is to direct development into areas with urban service commitments and away from outlying areas and areas of critical environmental resources. Implementation of these actions would generally reduce or eliminate the significant irreversible environmental changes that would result if areas with critical environmental resources (e.g. wetlands, marshes, agricultural lands, mineral resources, etc.) were developed.

THE GROWTH INDUCING IMPACTS OF THE PROPOSED ACTIONS

The land use management/development controls and the compact growth scenario would not induce growth in the region. Growth would occur even if no actions were taken by local governments to implement compact growth. Implementation of these policies and actions by local governments and other agencies would accommodate the population growth and resultant residential, commercial, industrial and other local services development needs of the region. These policies seek to direct the development necessary to accommodate the growth in the population in such a way that key air quality standards and objectives are met and maintained. Compact development would also have substantial benefits for environmental resources as discussed throughout this section.

IMPACTS OF THE DRAFT ENVIRONMENTAL MANAGEMENT PLAN

DESCRIPTION OF THE PROPOSED PROJECT

The Draft Environmental Management Plan includes four management plans for water quality, water supply, solid waste and air quality. It also contains institutional/financial and legislative recommendations to carry out the plan. The policies and actions recommended to carry out the plan are described in Chapters III through IX of Volume I of the Draft EMP. They are also noted in this Draft EIR.

SIGNIFICANT ENVIRONMENTAL EFFECTS OF THE PROPOSED PROJECT

The overall impacts of the Draft EMP are discussed in Chapter II of Volume I of the Draft EMP. The discussion summarizes the environmental, institutional/financial, economic and social impacts.

This discussion assess the significant environmental effects of the Draft EMP as required by CEQA and NEPA.

The Draft EMP addresses four major environmental issues facing the Bay area. It defines the problems and indicates what steps are necessary to solve them. The recommended policies and actions outline a plan of action that meets national and state requirements for clean air and water and for managing solid waste. It also describes a process to ensure continued integrated environmental planning.

As an integrated environmental management plan, it will have significant environmental effects. Implementation of the actions recommended will result in improved water quality, wise and efficient use and management of the region's water supplies and solid wastes and meeting the Federal oxidant standard.

Improved water quality would allow the region to benefit from a renewed marine economy, improved recreational opportunities and the reuse of reclaimed wastewater.

Improved management of existing water supplies and conservation and reuse actions could reduce the need to develop additional water supplies while still ensuring provision of water sufficient to meet the needs of the region.

Solid waste management actions will slow the consumption of diminishing resources and conserve energy. The actions will tend to make solid waste a resource rather than a problematic by-product which must be disposed of in land-fills with attendant loss of the resource value. Improved solid waste management means more land available for recreational and development purposes.

Reducing the health hazards posed by air pollution will affect many people. Air quality actions will result in substantial energy savings. Benefits to agriculture and other plant communities are other significant of the air quality recommendations. Benefits to the natural/physical environment would also result from the air quality recommendations.

ANY SIGNIFICANT ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED IF THE PROPOSAL IS IMPLEMENTED AND MITIGATION MEASURES PROPOSED TO MINIMIZE THE SIGNIFICANT EFFECTS

The Draft EMP describes the actions necessary to meet key Federal and State air and water quality standards and solid waste management objectives. As an integrated plan for managing the physical environment, it is virtually self mitigating. Meeting air quality standards may have water quality and solid waste effects. Meeting solid waste objectives will have effects on water quality and air quality. Managing water supply and meeting water quality standards and objectives will have air quality and solid waste effects. Because the Draft EMP is the result of an integrated planning process, the impacts of one plan on another were identified and the plans were made consistent. Significant (adverse) environmental effects of each plan are mitigated by the other plans.

Certain of the policies recommended would ultimately result in construction of facilities (e.g. wastewater treatment facilities, demonstration projects for resource recovery, wastewater solids projects, reclamation projects). As the actions are carried out by State, Regional and local governments, those agencies will become Lead Agencies under the definitions of CEQA. At that point, the site specific projects proposed to carry out the actions will be assessed for their significant environmental effects.

ALTERNATIVES TO THE PROPOSED ACTION

The major alternative to the Draft EMP in its entirety is no action. No action is not feasible. As the agency designated to prepare the Draft EMP ABAG is obligated by law to do so. Section 208 (b)(1) of the FWPCA requires that an areawide waste treatment management plan be completed not later than two years after the planning process is in operation. Section 208 also requires consideration of solids management in the areawide management plan. SB 424 requires the preparation of a regional solid waste management plan and the Resource Conservation and Recovery Act also supports regional solid waste management plans. The air quality portion is required by law as a result of the designation of ABAG to join with other State and Regional agencies to prepare such a plan.

RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF MAN'S ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

Local short-term uses of the environment would be necessary to carry out some of the recommendations in the Draft EMP. However, the recommendations collectively would contribute to the maintenance and enhancement of long-term productivity.

ANY SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL CHANGES WHICH WOULD BE INVOLVED IN THE PROPOSED ACTION SHOULD IT BE IMPLEMENTED

Certain of the policies of the Draft EMP will ultimately result in irreversible changes to the environment. The policies are those that recommend construction of facilities. As the actions proposed are carried out by State, Regional and local agencies, those agencies will become Lead Agencies under the definitions of CEQA. At that point, the site specific proposals to carry out the policies and actions will be assessed and the irreversible changes identified.

Other policies, most notably the land use management/development controls, would not in and of themselves result in significant irreversible environmental changes. Development will occur to accomodate the growth of the region's population and associated commercial, industrial and other local services. This would occur regardless of the land use management/development controls proposed in the Draft EMP. The effect of the policies is to direct development. Implementation of the actions would reduce or eliminate the irreversible environmental changes (to critical environmental areas for example) that would result if those areas developed.

THE GROWTH INDUCING EFFECTS OF THE PROPOSED ACTION

The Draft EMP should not have growth inducing effects. The plan is internally consistent. The individual management plans are consistent with one another and are mutually supportive. The wastewater treatment facilities list is structured to accommodate development in the region over the next twenty years. Water supply, conservation and reuse policies will ensure adequate water for development; the solid waste proposals will handle the solid waste generated and the mobile source and transportation controls will ensure mobility without deterioration of air quality. The land use management/development controls will direct development into areas with urban service commitments and away from areas without those service commitments and areas of critical environmental concern. Policies recommend the coordination of transportation, treatment facility provision and expansion and other service provision. Viewed as a whole, the Draft Environmental Management Plan for the San Francisco Bay Region is a sound plan for managing the region's major environmental resources now and in the future.

FOOTNOTES

Dee, Norbert et al, Final Report on Environmental Evaluation System for Water Resource Planning, Prepared by Battelle-Columbus Laboratories for the U.S. Department of the Interior, Bureau of Reclamation, January 1972.

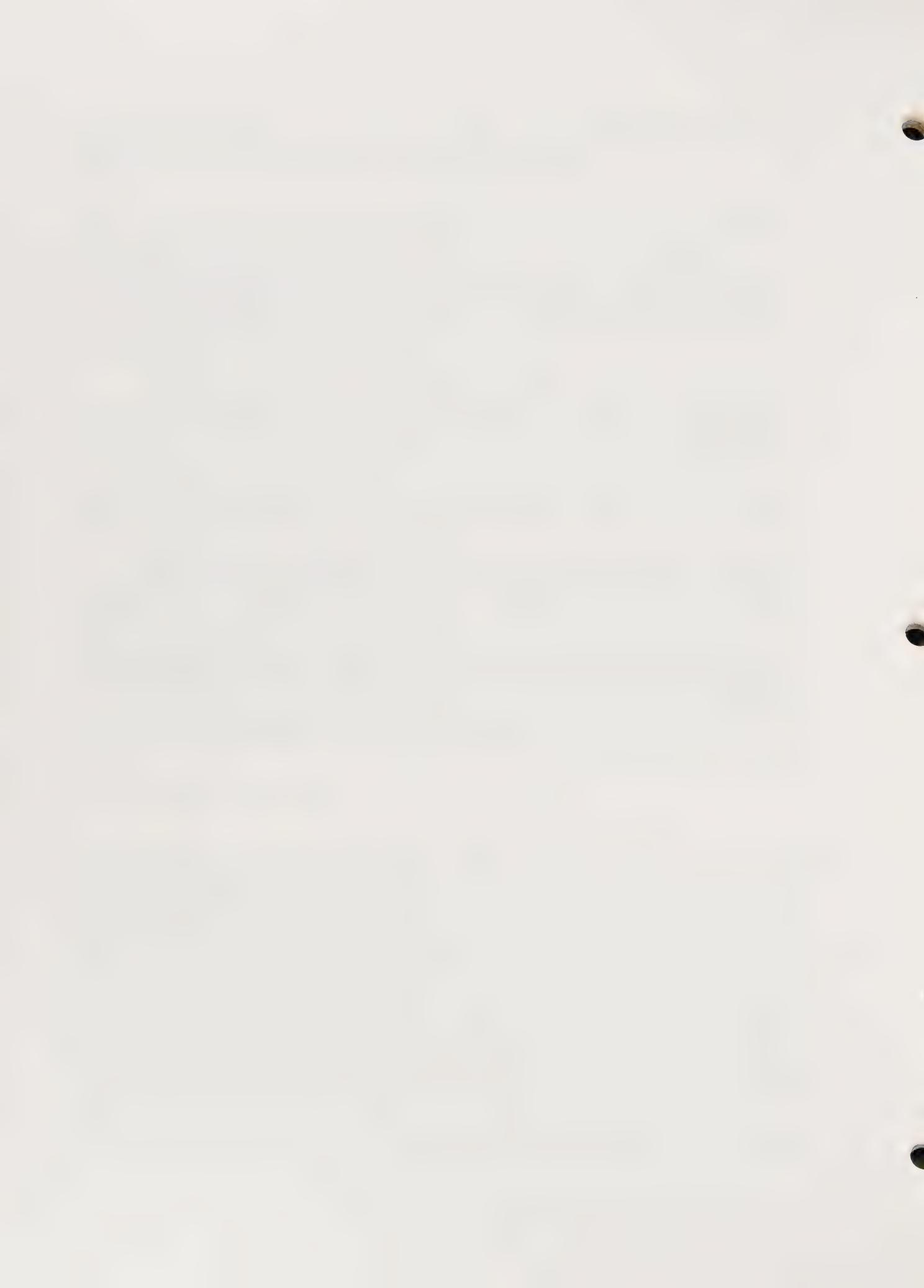
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Leopold, Luna B. et al, A Procedure for Evaluating Environmental Impacts, U.S. Geological Survey, Circular 645, 1971.

Sorenson, Jens C., A Framework for Identification and Control of Resource Degradation and Conflict in the Multiple Use of the Coastal Zone, University of California, Department of Landscape Architecture, 1971.

Association of Bay Area Governments, Provisional Series 3 Projections: Population, Housing, Employment, and Land Uses in the San Francisco Bay Region, March 1977.

J. B. Gilbert and Associates, Water Conservation, Reuse and Supply Report for the Bay Region, November 1977.



APPENDIX A

CANDIDATE CONTROL MEASURES FOR THE ENVIRONMENTAL MANAGEMENT PLAN



PRELIMINARY CANDIDATE CONTROL MEASURES FOR MUNICIPAL AND INDUSTRIAL DISCHARGES, NON-POINT SOURCES OTHER THAN URBAN RUNOFF AND WATER CONSERVATION, REUSE AND SUPPLY

INTRODUCTION

The purpose of this memorandum is to provide a preliminary listing of candidate control measures for use in the evaluation and assessment and public participation tasks. It is recognized that, due to the complex interrelationships between plan elements, control measures in one element, municipal facilities for example, may duplicate or otherwise influence control measures for another element such as water conservation, reuse and supply. In addition, because substantial efforts have been made already in the field of water pollution control some of the control measures listed are in the process of implementation.

MUNICIPAL WASTEWATER FACILITIES PLAN CONTROL MEASURES

The candidate control measures for municipal wastewaters fall into three groups.

- A. Measures to reduce wastewater volume and pollutant content at the domestic or commercial source.
- B. Measures to treat wastewater and reuse or dispose of wastewater effluent.
- C. Measures to control land use.

A Measures to reduce wastewater volume and pollutant content

- 1. Restrict availability of toxic materials. Restrict the commercial availability of inessential toxic chemicals for household use.
- 2. Control the use of household appliances. Prohibit or restrict the use of household appliances that adversely influence wastewater strength and volume e.g. garbage grinders, water softeners.
- 3. Reduce wastewater volumes by water conservation. Reduce wastewater generation by adopting water conserving practices such as low flush volume toilets, faucet aeration, etc.

4. Control infiltration and inflow. Control and reduce excessive infiltration and inflow into sewage collection facilities.
5. Adopt household water reuse practices. Install household plumbing systems that allow reuse of lightly polluted household wastewaters as sources of landscape irrigation water.
6. Conduct public awareness programs. Conduct education and information programs to increase public awareness of wastewater disposal problems.

B Measures to treat, reuse and dispose of wastewaters

1. Construct, enlarge and improve wastewater treatment facilities. - Construct, enlarge or improve community or sub-regional treatment facilities.
2. Construct effluent dispersion facilities. - Construct facilities to convey treated effluent to suitable receiving water bodies and effect adequate dispersion.
3. Construct reuse facilities. - Construct facilities to convey effluent to areas with a demand for reclaimed water.
4. Adopt measures to force/encourage wastewater reuse. - Adopt measures that will force or encourage the use of reclaimed water whenever it is available and is an adequate substitute for an existing water use.
5. Construct storage facilities to prevent combined sewage overflows. - Construct storage facilities within combined sewage collection systems to reduce peak flows at overflow locations.

C Measures to control land use

1. Control development patterns. - Encourage compact development to reduce the need for sewage collection facilities.
2. Relate zoning to effectiveness of individual wastewater treatment systems. - Relate zoning and permissible lot sizes to soil or other conditions that determine the effectiveness of individual waste treatment systems.
3. Prohibit new development. - Prohibit new development in areas where wastewaters cannot be disposed of without unacceptable damage to environmental values.
4. Restrict new development. - Restrict new development in areas where existing arrangements for sewerage service do not maintain compliance with waste discharge standards.

INDUSTRIAL DISCHARGE PLAN CONTROL MEASURES

The candidate control measures for industrial discharges are of a regulatory nature.

1. Prohibit discharges in certain areas. - Prohibit discharges to certain areas of bay and ocean where they are incompatible with other beneficial uses.
2. Impose more stringent discharge requirements. - Impose more stringent requirements on discrete industrial wastewater discharges to upgrade effluent quality.
3. Impose more stringent pre-treatment requirements. - Impose more stringent pre-treatment requirements on non-discrete industrial discharges to eliminate difficult-to-treat pollutants from the municipal sewage system.

OTHER NONPOINT SOURCE CONTROL MEASURES

The candidate control measures for other non-point sources of pollutants are described with reference to each pollutant source.

A Agriculture (Crops)

1. Adopt more efficient irrigation practices. - Adopt irrigation practices that allow water applications to be closely adjusted to crop and soil leaching needs in order to minimize return flows.
2. Adopt soil conservation practices. - Adopt practices that reduce soil erosion, such as contour farming, conservation-oriented crop rotation systems, and crop residue management.
3. Control agricultural chemical application rates. - Control closely application rates of fertilizers, pesticides and herbicides to minimize quantities of chemicals available for flushing into the ground or surface waters.
4. Restrict use of agricultural chemicals. - Restrict the use of not-readily degradable pesticides and herbicides.
5. Collect and treat irrigation return flow. Collect return flows from large areas in agricultural drains and manage as point sources of pollutants.

B Agriculture (Animal Husbandry)

1. Adopt runoff management practices. - Adopt practices that minimize generation of polluted runoff at feedlots and dairies by recycling wash waters, grading around manure stockpiles, etc.
2. Collect and treat polluted runoff, wash water, etc. - Collect polluted runoff and manage as a point source of pollutants.
3. Restrict animal access to watercourses. - Fence streams to prevent uncontrolled animal watering.
4. Adopt range management practices. - Adopt range management practices that prevent over-grazing and soil erosion.

C Forestry

1. Adopt soil-conserving harvesting practices. - Adopt harvesting practices that do not denude the harvested area of all runoff retaining vegetation.
2. Establish performance standards for logging haul roads. - Establish design criteria for logging haul roads that embody measures to prevent soil erosion.
3. Revegetate graded areas. - Seed and replant graded areas to rapidly reestablish vegetative cover.
4. Construct temporary sediment traps. - Construct temporary sediment traps downstream of logging activities to trap and remove sediment.

D Mining and Construction

1. Adopt runoff management practices. - Provide ditches, berms and conduits to route runoff around exposed cut and fill slopes and mine tailings.
2. Construct sediment traps. - Provide settling basins downstream of construction or mining sites to trap and remove sediment.
3. Revegetate graded areas. - Seed graded areas to rapidly re-establish vegetative cover.
4. Adopt hazardous material management practices - Adopt procedures for the safe disposal of waste materials from construction activities e.g. waste oil and fuel, asbestos-containing compounds, paints, etc.

5. Restrict slope and drainage practices. - Develop codes restricting maximum cut and fill slopes and establishing drainage requirements.

E Individual Waste Disposal Systems

1. Restrict the use of septic tanks. - Prohibit the use of septic tanks/leach fields in areas where soil type and topography make them functionally ineffective.
2. Establish/design criteria for septic tanks. - Establish design criteria for septic tanks and leaching fields that are logically related to soil permeability, slope, etc.
3. Establish septic tank maintenance and inspection programs. Establish programs for inspecting and certifying the performance of septic tank/leach field systems.
4. Establish performance standards for alternative individual waste disposal systems. - Establish performance standards for individual waste disposal systems other than septic tanks e.g. composting toilets, vaults, etc.
5. Construct facilities for handling septic tank pumpings at municipal treatment plants.

F Dredging Operations

1. Restrict dredging operations temporally - Prohibit dredging operations in certain areas during periods of fish migration and spawning.
2. Designate dredge spoil disposal sites - Designate dredge spoil disposal sites in bay and ocean suitable for disposal of different types of dredged material.
3. Monitor dredge spoil quality. - Monitor dredge spoil quality and assign to appropriate disposal sites.

G Vessel Wastes

1. Construct waste handling facilities at docks. - Construct sewer hook-ups or waste holding tanks at docks.
2. Construct waste handling facilities at houseboat berths. - Construct systems for handling wastes from semi-permanently moored vessels.

3. Require segregation of vessel wastes - Restrict the type of wastes that may enter vessel sanitary systems to those compatible with the municipal wastewater treatment facilities which they will ultimately enter.
4. Prohibit the discharge of waste in certain areas. - Prohibit the discharge of waste in certain areas either comprehensively (i.e., within the 3-mile limit) or within specific areas (i.e., the vicinity of bathing beaches or shellfish beds).

H. Aerial Fallout

This diffuse source of pollutants will be addressed in the Air Quality Maintenance Plan.

I. Solid Waste and Wastewater Treatment Residuals Disposal Activities

Control measures for these sources of pollutants will be developed in the Solid Waste Management Plan and San Francisco Bay Region Municipal Wastewater Solids Study.

WATER CONSERVATION, REUSE AND SUPPLY CONTROL MEASURES

Control measures for this plan element are divided into two groups; water conservation and supply; and reuse.

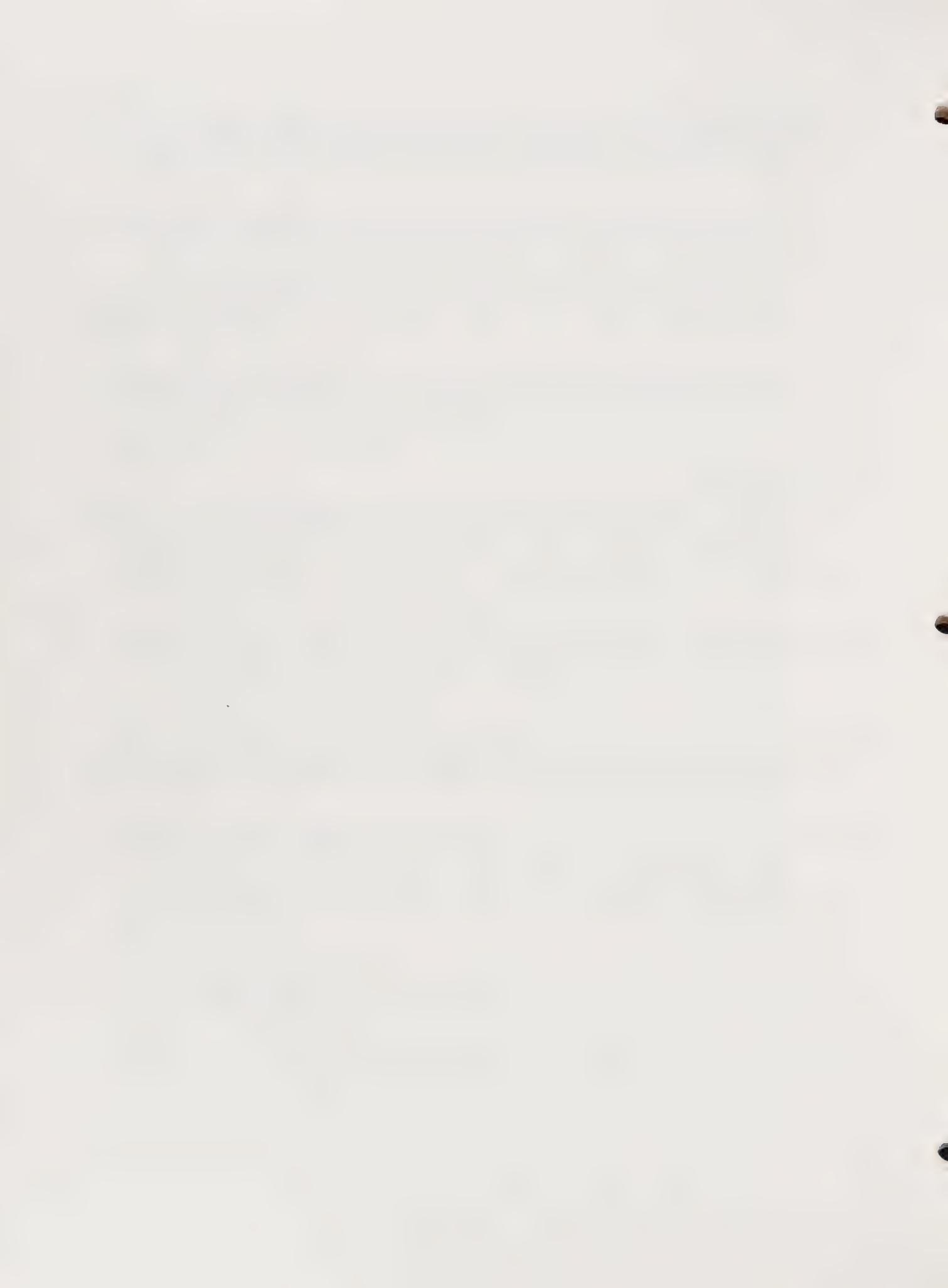
A Water Conservation and Supply

1. Restrict development of new supply sources. - Prohibit development of new supply sources unless the developer has an effective water conservation program.
2. Modify water supply rate structures. - Modify rate structures to encourage water conservation.
3. Install low water-use fittings in new homes. - Install low water-use shower heads and toilets and faucet aerators in all new homes.
4. Detect and repair leaks. - Detect and repair leaks in distribution system and provide assistance to consumers in detecting and repairing in-house leaks.
5. Install low water use fittings in existing homes. - Install retrofit water saving devices in existing homes.

6. Adopt low-water consuming landscaping practices. - Require low-water consuming landscaping at all new commercial or governmental buildings. Encourage residential adoption of low-water consuming landscaping.
7. Conduct public information program. - Conduct programs to increase public awareness of water use and conservation.
8. Adopt water conserving irrigation practices. - Adopt irrigation practices (spray or drip) that minimize irrigating losses and allow applications to be closely matched with crop needs.
9. Adopt water-saving industrial processes and practices. - Adopt industrial and commercial processes, in-plant reuse and good housekeeping practices that minimize water use.

B Water Reuse

1. Require the use of reclaimed water under certain circumstances. - Require the use of reclaimed water by industry or agriculture if reclaimed water adequately meets quality requirements for a particular use and if State Health Department regulations can be complied with.
2. Adopt measures to encourage wastewater reuse. - Adopt measures to encourage use of reclaimed water by industry and agriculture even when such use may involve some changes in agricultural or industrial practices.
3. Impose true cost of wastewater treatment on industrial and agricultural dischargers. - Impose true cost of wastewater treatment on dischargers to encourage in-plant and in-farm water reuse.
4. Adopt household water reuse practices. - Install household plumbing systems that allow reuse of lightly polluted household wastewaters as sources of landscape irrigation water.



DRAFT

EMTF/PLANNING PROCEDURES COMMITTEE
7/14/76 - Item #2

6/15/76 Surface Runoff Control Measures 6/15/76

Attached is a preiliminary list of surface runoff control measures for discussion purposes. This list will be revised based on comments by the local agencies and will be finalized by August 31, 1976.* The local agencies will consider all the control measures on the final list in preparing the county surface runoff management plans.

This preliminary list is not meant to include measures for implementation such as taxing, city ordinances, general plan amendments, and state and federal regulations. It includes the following four groups:

- A. Measures to reduce accumulation of pollutants prior to runoff.
- B. Measures to control land use.
- C. Measures to reduce amount of pollutants and the peak flow or volume of runoff.
- D. Measures to treat and store runoff.

It should be noted that many of the listed control measures can be considered in combination. If you have any questions or comments regarding this preliminary list, please contact Peter Chiu or Don Hemovich at 415/841-9730.

* These candidate control measures were adopted for the purpose of preparing the county surface runoff control plans.

Surface Runoff Control Measures
(Preliminary List)

Group A - Measures to reduce accumulation of pollutants prior to runoff.

These control measures are primarily designed for the reduction of pollutant accumulation in streets, storm drains, channels, etc. prior to the occurrence of storm.

1. Provide more frequent street cleaning

Increase in the frequency of street cleaning in densely populated or commercial areas.

2. Provide more efficient methods of street cleaning

Use of more efficient street cleaning devices or methods to reduce the amount of solid particles in the street.

3. Repair streets

Repair of streets in order to increase street cleaning efficiency and to reduce the accumulation of pollutants.

4. Control certain chemicals

Control use of certain chemicals which are known sources of pollutants. Such products include lawn fertilizers, pesticides, and other toxic chemicals used by householders.

5. Restrict auto parking

Restriction of auto parking in order to increase street sweeping effectiveness.

6. Control use of lots and streets

Reduction in the type of activities such as painting and car washing, auto repair and maintenance.

7. Control dumping

Control of dumping of residential, commercial, and industrial wastes on lots and streets.

8. Control littering and dog droppings

Control littering and dog droppings on streets and gutters.

9. Control automobile and other emissions

Control of emission from mobile and stationary air pollution sources, in order to lessen the amount of fallout which contribute to runoff pollutants. (This control measure will be considered by ABAG and not by the local agencies.)

10. Control direct discharge of pollutants

Control of direct discharge to storm water collection systems of pollutants such as paint, motor oil, pesticides, chemicals, and other hazardous liquid and solid wastes.

11. Clean storm water collection system

Periodic flushing and cleaning of storm drains and removal of debris from channels, pipes, inlets to prevent accumulation of solids in the collection system, perhaps keyed to prediction of rain.

12. Replace cross connections of sewerage systems

Separation of any cross connections between the storm sewer system and sanitary sewer system.

13. Insure proper operation of septic tanks and leach fields.

Proper construction and maintenance of septic tanks and leach fields to prevent surfacing septic tank effluents, which would increase the BOD and bacteria loading of surface runoff.

Group B - Measures to control land use

These control measures are primarily land use requirements which would modify the amount of pollutants and runoff generated from developed areas.

1. Develop slope density standards

Establishment of slope density standards which would limit the development of hillside areas thereby reducing the amount of sediments and runoff.

2. Maintain open space areas

Concentration of urban development to minimize the impervious land surface which will increase the quantity of runoff.

3. Control development patterns

Control of certain types of land use which are known to cause high amount of pollutants or runoff in environmentally sensitive areas. For example, restriction of development in flood plain or near stream channels and lakes in order to prevent large amount of pollutants from being transported directly into the waterway.

4. Develop buffer strip requirements

Development of buffer strip such as grass lands or undeveloped open space surrounding new developments in order to reduce the amount of runoff by infiltrating or retarding storm water.

Group C - Measures to reduce amount of pollutants and the peak flow or volume of runoff.

These control measures are primarily designed to reduce the total amount of pollutants and the peak flow or volume of runoff. It should be noted that modification of the peak flow alone may or may not reduce the amount of runoff or pollutants.

1. Control roof drains

Control of roof drains connected to storm sewers in order to reduce amount of runoff.

2. Construct rooftop detention and storage

Construction of rooftop detention and storage with appropriate outlet structures in order to delay the runoff thereby reducing the peak of the hydrograph.

3. Rechannel runoff to prevent flow over critical surfaces

Construction of channels, berms and other control structures to reroute flows around areas that have accumulated pollutants.

4. Redesign curb and gutter configurations

Redesign of curbs and gutters and streets to either delay or speed up the flow of urban runoff to provide for a more uniform flow in the collection system.

5. Remove debris in channels, pipes, and inlets, to improve flow.

Removal of large size debris such as construction and demolition debris in order to improve flow conditions in the collection system thereby reducing overflow; flooding and erosion.

6. Regrade disturbed areas

Regrading or terracing of areas that have been modified by construction related events or by natural erosion, in order to reduce the amount of sediment carried off by runoff.

7. Reseed or apply vegetative cover to bare slopes

Reseeding or applying vegetative cover to bare slopes to prevent loss of top soil thereby reducing the amount of sediments carried off by runoff.

8. Stabilize channels of rivers and streams

Stabilizing channels of rivers and streams to prevent soil loss in the storm channel through erosion and undercutting.

9. Control erosion at construction sites

Control of erosion at construction sites by checkdams, berms, straw bales, mulch and road maintenance in order to reduce or prevent runoff from reaching major drainage channels by entrapping sediment that has been carried off the construction site.

10. Regulate construction schedules to avoid concentration of activities in time or space.

Regulation of construction schedules to insure that runoff might be minimized either by staging or by scheduling projects with a consideration of runoff impacts.

11. Construct permanent berms for critical sources

Construction of permanent berms for critical sources such as gas stations, garages, and feedlots to prevent

runoff carrying critical constituents (metals, hydrocarbons, oil and greases) from reaching the stormwater collection system.

12. Use energy dissipators to reduce potential for erosion or transport of solids.

Construction of dissipators in stream channels to reduce sediment load and prevent channel erosion.

13. Increase perviousness of surfaces

Increase of pervious surfaces through construction of Dutch drains or porous asphalt paving in flat areas to allow water to infiltrate into the ground in order to reduce runoff.

14. Require minimum amount of pervious surfaces for new construction.

Requiring new construction projects to maintain a certain percent of the land to be pervious.

15. Use efficient tillage and plowing practices for agricultural areas.

Use of efficient tillage and plowing practices for agricultural areas to minimize areas disturbed thereby reducing runoff and soil erosion.

16. Modify drainage basin

Modification of land drainage to reduce the flow and to change the routing of runoff.

17. Modify weather

Modify the weather to limit the amount of precipitation falling on an area. (This control measure will be considered by ABAG and not by the local agencies.)

Group D - Measures to treat and store runoff

These measures are primarily designed to treat runoff directly or store flows for later treatment. They are mostly high capital intensive structural solutions.

It should be emphasized that these measures will only be considered at a reconnaissance level in preparing the county surface runoff management plan. Reconnaissance level means that the investigation would be limited to the following:

- A brief description of the control measure including the type of proposed facilities and treatment process and the capacity and method of operation of the facilities.
- A map of the county showing the location of major proposed facilities.
- An estimation of capital and operation and maintenance costs based on cost curves provided by ABAG.

1. Trap sediment and solids by use of catch basins

Construction of large catch basins to trap sediments carried by the storm water.

2. Impound runoff in upstream channels

Upstream impoundment of runoff to modify the peak flow.

3. Construct on-line or off-line storage

Construction of aboveground or underground storage facilities including ponds and tanks and oversized interceptors to which the storm water flow can be diverted and released after the peak storm flow.

4. Use existing capacity of storm sewers for storage of flows.

Use existing capacity of storm sewers for storage of flow. It may require use of remote sensing and computer-directed control systems that provide centralized control of regulator and pumping stations on trunk and interceptor sewers to optimize storage.

5. Construct treatment facilities

Construction of treatment unit processes such as screening, floatables removal, filtration disinfection, nutrient removal, swirl concentrators, biological systems, and physical-chemical systems depending on the type and amount of pollutants to be removed. Such unit processes can be added to the existing facilities or constructed as new facilities for storm water.

6. Use capacity at existing treatment plants

Use of available capacity at existing treatment plants to remove pollutants from storm water. Such a measure would require flow equalization and storage.

7. Prevent direct discharge of storm water into receiving waters.

Prevention of direct discharge of storm water into receiving waters by routing of treated or untreated storm waters to artificial lakes, or irrigation ponds.

9/21/76

DRAFT

Solid Waste Control Measures

1. Assure adoption of performance standards and other requirements for proper operation of landfill sites. Requirements may include:
 - o measurement of waste quantities provided
 - o daily cover for waste applied
 - o open burning prohibited
 - o fire protection provided
 - o dust and noise control provided
 - o drainage and grading provided
 - o monitoring program provided
2. Assure proper design of landfill sites to avoid direct hydraulic continuity with surface and ground waters.
 - o Assurance of proper design features such as impermeable liners, collection systems for leachate and hazardous gases, and monitoring wells where appropriate.
 - o Assurance of adequate review of proposed design for new landfill sites.
3. Assure availability of class I sites for disposal of hazardous wastes.
 - o Selection of potential site areas based on the environmental, social and economic criteria and on the type of hazardous wastes to be handled.
 - o Investigation of joint purchase of suitable site areas and buffer areas to preserve sites from encroaching development.

4. Enact and enforce regulations and ordinances covering storage, collection, transportation and disposal of residential, industrial, agricultural and other special wastes such as hazardous wastes and wastewater solids. Examples of the regulations and ordinances are:

- o Ordinances for litter control.
- o Ordinances for control of illegal dumping to sewers.
- o Regulations for the transportation of hazardous wastes.

5. Enact programs for reduction of the quantities of wastes disposed of in landfills or dumped on land. Such programs may include:

- o Home separation and separate collection of recyclable materials.
- o Public subsidy of recycling center operations for municipal wastes and certain hazardous wastes, such as crankcase oil, pesticide containers, etc, as appropriate.
- o Capital expenditures for mechanical separation facilities.
- o Public education toward changing household consumption and waste handling patterns.
- o Placement and maintenance of litter receptacles and drop boxes in urban, recreational and rural areas.
- o Paper recycling in public offices.
- o Requiring the use of returnable beverage containers on a regionwide basis.

6. Advocate adoption of Federal and State policies to promote source reduction, recycling, and resource recovery. Policy areas may include:

- o Use of returnable containers
- o Reduced packaging
- o Equalization of freight rates between virgin and secondary materials.
- o Research into processes for recycling, conversion, recovery of resources from solid wastes.
- o Authority and funding for solid waste management and resource recovery planning at the regional level.

PRELIMINARY AIR QUALITY MAINTENANCE
CANDIDATE CONTROL MEASURES

DRAFT

Air quality maintenance planning requires a comprehensive control strategy approach for the air pollution problems of the region. It is anticipated that an air pollution control program aimed at long term solutions will include land use and transportation control measures, as well as the rigorous enforcement of maximum technological controls on stationary sources and automobiles.

The following list of control measures is a sample of the types of measures that have been suggested in other areas of the country and should serve as a starting point for discussing the most effective programs for the Bay Area. The listing is not exhaustive, but rather indicative of the selection of tactics which might be appropriate.

Of primary importance in the review of control measures for air quality maintenance are the issues of implementation and enforcement. The authority to implement and enforce various air pollution controls resides in a number of governmental agencies from the federal level through local planning commissions and special districts. Evaluation of the control measures for their feasibility of implementation will be considered at the same time that their technical effectiveness is being evaluated.

I. STATIONARY SOURCE EMISSION CONTROLS

The Bay Area Air Pollution Control District (BAAPCD) has currently in effect permit requirements which include many of the stationary source control measures listed below. The District's permit authority, which had been limited to new and modified sources, was extended to include existing sources on January 1, 1976. Therefore, the air quality maintenance planning process will consider recommendations to both increase the level of control under existing permits and require similar controls on sources which have not yet been brought into the permit system.

A. Stationary (or "Point") Sources

These control measures are designed to reduce pollution from fixed location sites such as power plants, refineries, and other industrial/commercial facilities.

1. Stack Controls

Combustion products and process losses which are normally vented to the atmosphere through stacks may be controlled directly by the installation of appropriate air pollution control equipment--e.g., baghouses (filters), scrubbers, and electrostatic precipitators.

2. Fugitive Emission Controls

Emissions from certain types of chemical, food, and other industrial processes may be controlled by wetting down or by containing the process in closed buildings or geodesic domes.

3. Process Controls

Emissions from combustion processes may be reduced by desulfurization of petroleum products, substitution of cleaner burning fuels (such as methanol), improving furnace design, and altering the fuel/air mixture ratio.

4. Indirect Controls

Reducing the level of operation of certain sources may be achieved by various indirect methods. For example, power plant emissions may be reduced by increasing the efficiency of home appliances such as refrigerators and air conditioners.

B. Diffuse (or "Area") Sources

These control measures are designed to reduce emissions from sources such as service stations and dry cleaners which are individually insignificant, but which become major contributors by virtue of their numbers.

1. Organic Solvents

Evaporation of photochemically reactive hydrocarbons from paints, dry cleaning operations, pesticides, etc., may be reduced by substituting less reactive organic solvents, and by increased use of other technologies.

At specific facilities (e.g., paint spray booths), emissions may be controlled by catalytic oxidation, direct flame incineration or activated carbon adsorption of organic vapors.

2. Gasoline Evaporation

Gasoline vapor loss may be reduced by using vapor recovery systems during transfer, reducing the volatility of gasoline as is done for aircraft fuels, modifying gas pump nozzle design to reduce spillage, and eliminating "topping off" gas tanks.

3. Particulate Emissions

Small scale filter and water wash units may be used to reduce emissions from sources such as paint spray booths; dust from construction and demolition sites may be controlled by wetting down. Additional reductions may be obtained by limiting access to unpaved roads and by limiting agricultural activities during dry periods. Emissions resulting from agricultural burning and forest/brush removal may be reduced by the use of portable controlled burning systems.

4. Small Engines and Appliances

Reduction of emissions from miscellaneous combustion sources (lawn mowers, furnaces, clothes dryers, etc.), may be achieved by improved design, installation of control devices, and increased use of electrical power.

II. MOBILE SOURCE EMISSION CONTROLS

A. Automobile Emission Control Measures

The control options for automobiles may be broken down into three major classifications: technological controls, improvements in traffic operations, and reducing automobile use.

1. More Stringent Emission Standards for New Cars

Control of automobile emissions is the responsibility of the State and Federal governments. California has the option of accepting the federal emission standards or adopting more stringent ones for automobiles sold

in California. It is the current policy of the Air Resources Board to require new automobiles to meet the most stringent standards technically feasible and economically possible.

2. Controls for Existing Automobiles (Retrofit Devices)

The addition of a new item, or the modification or removal of an existing item of equipment on an automobile after its initial manufacture.

3. Periodic Inspection and Mandatory Maintenance (I/M)

Reducing emissions through a system of periodic inspection and mandatory maintenance of air pollution control devices, or other engine components directly related to auto emissions.

4. Cleaner Burning Fuels or Engines

Develop non-polluting vehicles powered by alternative fuels or modified engines.

5. Improved Traffic Flow

Fewer stops and starts result in lower vehicle emissions. Careful planning, design and construction of street and intersections, computer-controlled signalization systems and better traffic signing are a few ways to help smooth the flow of traffic on city streets. Freeway and major arterial traffic flow may be improved by use of: ramp meters, traffic signals or special meters which control access to freeways; variable route signs, electronic signs which can direct traffic in different directions or along different routes to avoid further congestion; adjusting speed limits to provide for the most fuel-efficient vehicle operation; staggering work hours to extend and flatten the peak loads of trips to and from major employment areas.

6. Restrict Automobile Ownership

These control measures are designed to reduce the total automobile population and/or reduce the number of the older, more polluting, automobiles. Such measures might include economic incentives or limited registration by vehicle weight, age or pollution potential.

7. Restrict Automobile Use

Measures to restrict automobile use might include: auto-restricted/auto-free zones, parking management, limiting gas sales, increase/decrease driving age, toll roads, or fuel/mileage tax. Auto use could also be restricted throughout the region during pollution episodes.

8. Reduce the Need to Travel

Commute trips may be reduced by promoting a four-day work week throughout the region. Other trips may be eliminated by combining intraregional passenger and freight movement on the same vehicle, encouraging the use of communications systems in lieu of making a trip, coordination among stores and other services of goods deliveries to residential areas.

9. Encourage Alternative Means of Transportation

Increasing vehicle occupancy may be encouraged by promoting cost, convenience, or travel time-related measures to enhance the attractiveness of car pools, van pools, taxis, or jitney services. Measures might include subsidies, preferential parking, and preferential traffic control treatment.

Increasing mass transit patronage may be accomplished by transit service improvements, fare reductions, traffic-related incentives, park/bike-and ride facilities, demand-response systems, subscription transit, employee transit incentives, and gas rationing.

Non-polluting forms of transportation may be encouraged by improvement of bicycle and pedestrian facilities throughout the region.

B. Truck, Bus, and Other Heavy Duty Vehicle Emission Control Measures

Many control options for these vehicles are similar to those for automobiles. To avoid repetition, the explanation of control measures repeated in this section will contain only information which may differ from that given for automobiles.

1. More Stringent Emission Standards for New Vehicles

There is significant debate concerning the appropriateness of current standards and the possibility exists for establishing stricter controls. Currently these vehicles are relatively uncontrolled.

2. Controls For Existing Vehicles (Retrofit Devices)

This control measure may be important for trucks, buses and other heavy duty vehicles which remain in circulation much longer than automobiles.

3. Periodic Inspection and Mandatory Maintenance (I/M)

A system for heavy duty vehicles comparable to that proposed for autos.

4. Cleaner Burning Fuels or Engines

Development of new technologies in fuels and/or engines for heavy duty vehicles.

5. Improved Traffic Flow

Limiting the time and place of service and goods deliveries to off-peak hours and side streets reduces traffic congestion. Provision of contra-flow or off-road bus lanes can also improve traffic flow.

6. Reduce Heavy Duty Vehicle Use

Provision of "truck free" zones, optimization of routes and schedules and strategic location of storage and transfer terminals for consolidation of movement of goods are other methods to reduce use.

C. Other Mobile Sources

These control measures are designed to reduce emissions from aircraft, motorcycles, ships, railroad-locomotives, and off-road vehicles.

1. Aircraft

Ground level emissions from commercial jets may be reduced by towing them to the runway for takeoff, or by using fewer engines at higher (hence more efficient) power settings for taxiing. Installation of evaporative

controls, and a new method for clearing fuel lines would reduce emissions from general aviation piston aircraft. EPA regulations (1973) required smoke emission controls on all existing turbine engines, and set standards for new aircraft engines which became effective in 1979 and 1981. Other jet engine modifications may be made which will reduce pollutant emissions.

2. Ship and Rail

Reduction in emissions may be achieved for ships by the use of clean fuels within designated boundaries. Diesel locomotive emissions may be reduced by increased use of electric locomotives.

3. Off-Road Vehicles

New vehicle emission standards for off-road vehicles (effective 1990) will reduce the contribution of this source. Additional control measures could include restricting the time of day and/or seasons during which off-road recreational vehicles could be operated, and restricting use of off-road vehicles to certain areas. Various other measures similar to those for light duty vehicles may be used, including inspection/maintenance programs, and conversion to cleaner fuels.

III. LAND USE/LAND DEVELOPMENT CONTROLS

A. New Source Review

Control of the number and size of new stationary sources based on their emission potential. The BAAPCD has existing new source review rules. This control measure might require more stringent new source review criteria and procedures than currently exist.

B. Indirect Source Review

A review procedure for those facilities that by themselves are not a significant source of emissions but which attract considerable auto related activity (e.g., shopping center). Specific actions can be taken to help reduce air pollution emissions from indirect sources. For example, on-site circulation systems can be designed to coordinate with off-site systems, thus reducing congestion points.

C. Emission Allocation

Emission allocation requires emissions be limited to prescribed levels within an air basin by placing emission quotas on each area of the basin. The allocation is based on the established relationship between the assimilative capacity of the ambient air in the basin and the amount of emissions within the basin that would not violate air quality standards.

D. Development Timing Controls

This measure attempts to curb the rate of development by prescribing an annual quota or permit system for new development. New development proposals are evaluated with respect to conformance with such determinants as capacity of public facilities (e.g., schools, wastewater treatment capacity) to service them.

E. Modifying Local Comprehensive Planning Policy

This measure involves the inclusion of air pollution control as one of the policies to be used in developing comprehensive plans. Appropriate objectives for the comprehensive plan may include promotion of in-fill development as opposed to development on the urban fringe, and the design of an urban form which is conducive to providing efficient transit service.

F. Modifying Local Comprehensive Planning Practice

This is a strategy appropriately used by local governments to ensure optimal location of land use types and densities and to promote better relationships among land uses (from an air quality standpoint). Encouraging a mix of land uses within the municipality can help satisfy people's needs for housing, work, play, shopping, etc., without traveling long distances. For example, a park can serve the recreation needs of many, reducing the need to go elsewhere if no park were provided. Encouraging certain land uses to locate adjacent to others can encourage pedestrian and bicycle connections. For example, office parks can be mixed with or be adjacent to residential areas.

Final Candidate Control Measures for Air Quality

1. Require the use of high solid coatings where practical.
2. Require the use of water based coatings where practical.
3. Adopt the CARB standards for organic liquid storage.
4. Adopt closed system organic liquid storage with vapor recovery.
5. Require vapor recovery on small solvent users.
6. Adopt organic solvent regulation developed by the CARB Organic Solids Committee.
7. Enact a new maximum SO₂ emission limit of 300 ppm.
8. Require reduced sulfur content in fuels to .025%.
9. Adopt NO_x controls for non-highway and construction equipment.
10. Adopt NO_x limits for all new boilers.
11. Adopt lower particulate loading requirement - 0.05 to 0.1 grains/SCFM.
12. Adopt lower process weight allowable scale.
13. Adopt lower process weight maximum allowable scale.
14. Adopt best available control technology (BACT) regulation for existing sources with a time scale for compliance.
15. Adopt BACT regulation for all sources in lieu of emission concentration limits.
16. Adopt BACT regulation for all sources in addition to emission concentration limits.
17. Adopt a modern process technology rule aimed at promoting modernization of the areawide plant. This might, for instance, suspend BACT rule for an agreement to modernize a plant with BACT included in modernized version. The intent of such a regulation would be to encourage modernization of old plants with new plants having improved pollution control technology.
18. Extension of current BAAQMD requirements to smaller operations, i.e., fewer exemptions.
19. New Source Review (NSR) - continue present rule.
20. New Source Review - Adopt 100% off-set policy.
21. New Source Review - Adopt 110% off-set policy.
22. New Source Review - Adopt a sliding scale for emission off-set.
23. NSR Options 20, 21 or 22 with a limited area for emission off-set.
24. NSR Options 20, 21 or 22 with inter-pollutant emission off-set.
25. NSR Options 20, 21 or 22 with no inter-pollutant off-set or inter-pollutant off-set governed by location, etc.
26. NSR Options 20-25 qualified so that no credit is allowed for emissions that are in excess of other limitations.
27. NSR Options 20-25 with arrangement for off-set banking, allowing a prospective new source credit for emission reduction off-set achieved beyond that required by existing regulations.
28. Adopt regulations to promote industrial energy conservation.
29. Plant operation scheduling:
 - a) Seasonal scheduling to reduce polluting operations during critical weeks or months as determined by meteorology.
 - b) Scheduling maintenance down time and vacations, possibly short downs, to reduce pollutant load at critical times.
 - c) Interruptable operation dependent upon air quality conditions.
30. An air monitoring and meteorological analysis to identify and recommend mitigation measures, for certain localized problems.
31. Adopt particulate regulation based on particle size.
32. Replace throw-away container with re-usable containers.
33. Burn solid waste near point of generation, to reduce long hauls.
34. Apply 1309 with modified trade-off of 1311 and 1311-2 clearly described as an option.
35. Requiring some sort of retrofitting on older plants. Apply BACT to newer plants through permit system.
36. Penalty charge or tax based on amount of emission to encourage reduction.
37. Lowering the reid vapor pressure of gasoline to reduce hydrocarbon emissions from storage, handling and use of motor vehicle grade gasoline.

II. Mobile Sources

1. Implement an evaporative emissions retrofit program for all vehicles.
2. Implement a catalytic retrofit program for post-71' vehicles able to operate on unleaded gasoline.
3. Adopt more stringent application of compliance procedures.
4. Adopt more comprehensive new and used motor vehicle surveillance program.
5. Adopt a mandatory vehicle inspection and maintenance program for light and heavy duty vehicles.
6. Adopt more stringent evaporative emission standards.
7. Implement a heavy duty gasoline exhaust emission retrofit program.
8. Adopt more stringent exhaust emission standards for new light and heavy duty vehicles.
9. Promote the use of new or modified fuels.
10. Promote the use of alternative power sources.
11. Establish emission standards for other mobile sources such as construction equipment, locomotives, ships, or recreational vehicles.

III. Transportation Controls

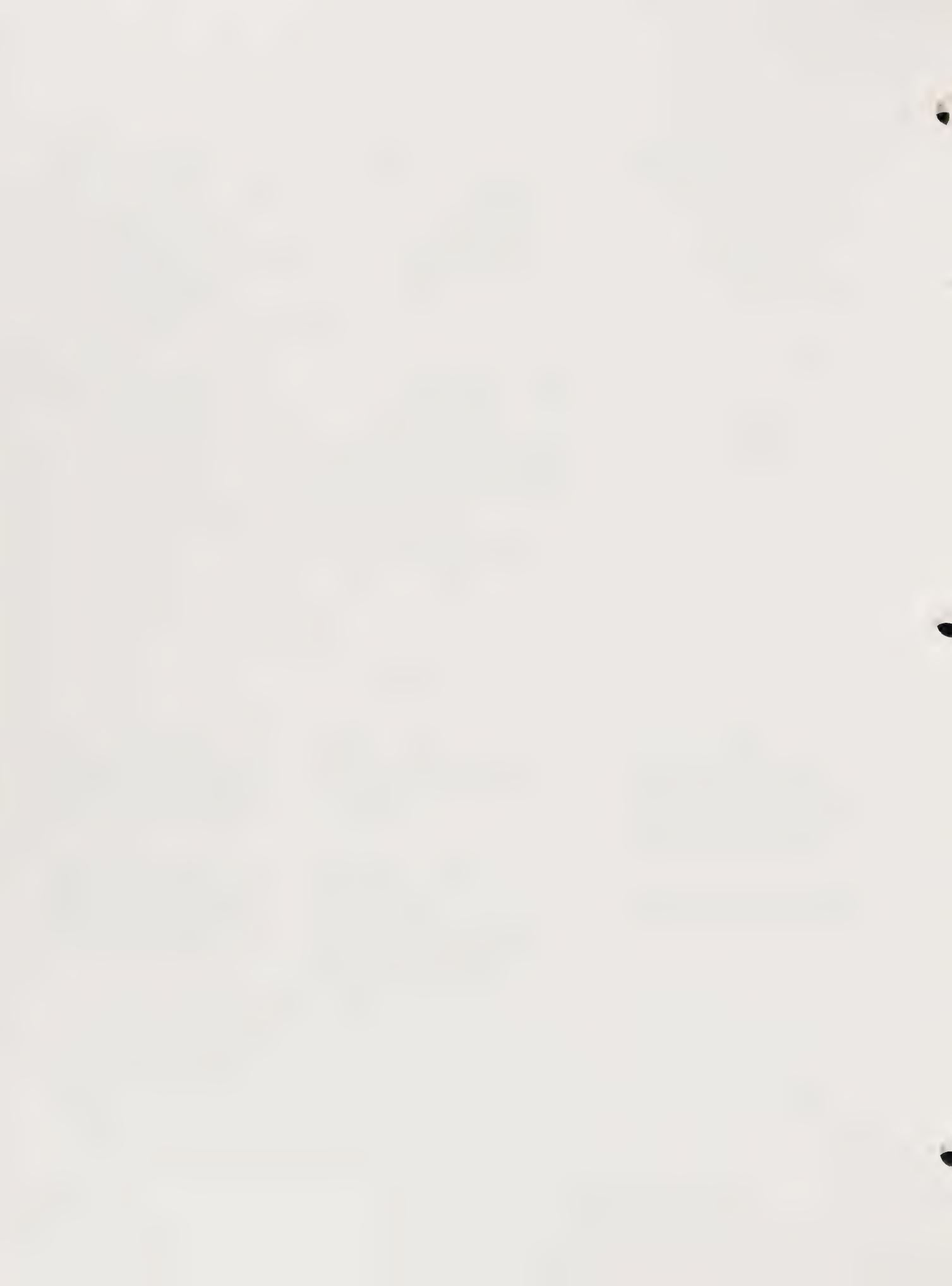
1. Measures to Improve Traffic Operations
 - A. Improve Traffic Flow
 - 1) Computerized traffic control
 - 2) Ramp Metering
 - 3) Traffic engineering improvements
 - 4) Off-street freight loading
 - B. Reduce peak-period traffic volumes
 - 1) Staggered work hours
 - 2) Four day work week
 - 3) Off-peak freight delivery
2. Measures to Reduce Vehicle Use
 - A. Restrict Vehicle Ownership
 - 1) Additional license fee
 - 2) Registration limits
- B. Management of Auto Access
 - 1) Better enforcement of parking regulations
 - 2) Limit on number of parking spaces
 - 3) On-street parking prohibited during peak hours
 - 4) Area license
 - 5) Auto-free zones
 - 6) Gas rationing
- C. Increase Cost of Auto Use
 - 1) Road pricing
 - 2) Increased parking costs
 - 3) Parking fee for shopper parking
 - 4) Eliminate free employee parking
 - 5) Increased gas tax
 - 6) Increased tolls
 - 7) "Snoq charges"
- D. Reduce the Need to Travel
 - 1) Communications substitutes
 - 2) Goods movement consolidation
3. Measures to Encourage Alternative Model of Travel
 - A. Increase Transit Ridership
 - 1) Additional transit service
 - 2) Fare reductions
 - 3) Improved comfort
 - 4) Bus and carpool lanes
 - B. Encourage Pedestrian Mode
 - C. Encourage Bicycle Mode
 - D. Encourage Ride Sharing
 - 1) Toll reduction for carpools
 - 2) Preferential parking and carpools
 - 3) Carpool matching information
 - 4) Assist vanpool formation
 - E. Promote Para-Transit Alternatives

IV. Land Use Management/Development Controls

More effective management of all five major aspects of land development through coordinated action by cities, counties, special districts, or regional and State agencies to reduce the magnitude and frequency of auto travel:

1. Timing - expand the presently very limited application of timing controls such as growth sequence zoning, building permit quotas, staging of sewer and water infrastructure and plant capabilities, etc.
2. Quantity - expand the presently scattered application of quantitative controls on development such as performance standard zoning and limited sewer and water infrastructure and plant capacities.
3. Location - Improve the presently inconsistent application of controls on the location of development such as coordinated management of infrastructure location, annexations, public land acquisition, agricultural preserves, hillside and soil conservation, and development moratoria.
4. Density - Encourage transit usage and other non-auto modes with coordinated density policies among local jurisdictions through the application of innovative density zoning mechanisms (slope density, building height regulations, etc.) fully coordinated with service capacities and commitments.
5. Type - Reduce home-to-work & home-to-non-work travel by encouraging more land use mix, especially in terms of housing/jobs balance.

APPENDIX B
ASSESSMENT CHECKLIST FOR THE
ENVIRONMENTAL MANAGEMENT PLAN



ASSESSMENT/EVALUATION PROGRAM

ASSESSMENT CHECKLIST

TECHNICAL MEMORANDUM NO. 1

November 1976

Background:

Assessment/Evaluation is a process conducted as the environmental management plans are developed. Assessment concentrates on the development of information about the potential impacts of alternative plans. Evaluation involves the use of the impact information by decision-makers in selecting the preferred alternative plans.

The goal of the assessment process is to compile information on a full range of effects that might be associated with control measures and alternative plans. The Assessment Checklist is the first step in realizing that goal. The Checklist, developed with the aid of public input, represents factors considered to be important in assessment/evaluation of pollution control measures. The second step in the assessment process involves identifying potential impacts of particular control measures using the Checklist factors in a matrix analysis. The third step involves developing a procedure to predict the nature and extent of the impact. The impact information is then displayed in summary form (with full back-up documentation) for evaluation by decision-makers.

Assessment Checklist Clarification

Assessment factors are organized into four broad categories -- Environmental, Institutional and Financial, Economic and Social. There is no implied weighting of importance in the organization nor are the categories mutually exclusive. The overlaps and interrelationships across categories cannot be reflected in a list merely displaying the types of potential impacts that could be studied. The assessment procedures will identify such interrelationships.

The Assessment Checklist also serves as one part of a screening mechanism. The major categories and subcategories of the Checklist can be related to the candidate control measures in a matrix analysis. The matrix analysis shows cause-effect relationships, screens out the number of criteria affected by a control measure, and directs the assessment of alternative plans.

When viewing the Assessment Checklist, these points should be kept in mind:

- 1) Not every factor will be used to assess every control measure or alternative plan.
- 2) Assessment procedures will incorporate both qualitative and quantitative impact methods and data.
- 3) The impact information will include a discussion of the reliability of the data and all assumptions used in the assessment procedures.

ASSESSMENT CHECKLIST

I. ENVIRONMENTAL CRITERIA

A. Air Quality

1. Federal standards for air quality

- Total suspended particulates
- Carbon monoxide
- Photochemical oxidants
- Hydrocarbons
- Sulfur dioxide
- Nitrogen dioxide

2. State standards for air quality

- Lead
- Sulfate
- Hydrogen sulfide
- Ethylene
- Visibility reducing particulates

3. Other air quality considerations

- Ozone depletion
- Odor

B. Surface and Ground Water Quality and Quantity

1. Effect on beneficial uses

- Municipal and domestic supply
- Agricultural supply
- Industrial process supply
- Industrial service supply
- Groundwater recharge

- Freshwater replenishment
 - Navigation
 - Hydropower generation
 - Water contact recreation
 - Non-contact water recreation
 - Ocean commercial and sport fishing
 - Warm freshwater habitat
 - Cold freshwater habitat
 - Preservation of areas of special biological significance
 - Saline water habitat
 - Wildlife habitat
 - Preservation of rare and endangered species
 - Marine habitat
 - Fish migration
 - Fish spawning
 - Shellfish harvesting
2. Water quality objectives have been set forth in the Basin Plan (Water Quality Control Plan, San Francisco Bay Basin) to protect the beneficial uses of surface and ground waters. These objectives have been accepted by State and Federal agencies. The assessment process will involve the estimation of the effects of alternative environmental management strategies with respect to these water quality objectives and other policies.
3. The assessment process will also involve the estimation of mass emission rates of pollutants. These emissions will include:
- Organic material
 - Nutrients
 - Sediments and other suspended solids
 - Disease causing organisms

- Floating material
- Heat
- Radioactivity
- Heavy metals and other toxicants
- Chemical constituents

4. Effect on surface and ground water quantity

- Impact on surface water supplies and requirements for water importation
- Impact on groundwater table
 - Changes in safe yield
 - Subsidence

C. Physical Resources

1. Effect on flora and fauna

- Impacts on desirable, unusual, rare, or endangered species
- Impact on plant species which provide cover and food for important wildlife species
- Effects upon noxious species of plants or animals

2. Effect on the supply of critical land-related resources

- Impact on prime or unique agricultural lands
- Impact on other agricultural lands
- Impact on mines, quarries, and mineral-bearing lands.
- Impact on timber-producing and other forested lands
- Impact on salt ponds
- Impact on geothermal sites
- Impact on wet lands, marshes, coastal zones, and estuaries
- Impact on wildlife habitat
- Impact on hilly land, fragile land, or land subject to erosion

3. Effect on land sites with special development characteristics

- Effects upon lands uniquely suited for seaport, airport, marina, or energy site development

4. Effect on recreation use or potential

- Impact on actual or potential recreation sites (e.g., parks, beaches, stadia, etc.)
- Impact on recreation use

5. Effect on solid waste

- Impact on solid waste volume
- Impact on resource recovery
- Impact on hazardous materials

D. Energy

1. Effect on energy consumption/demand

- Impact on natural gas consumption
- Impact on electricity consumption
- Impact on petroleum consumption
- Impact on coal or other non-renewable energy resource consumption

2. Effect on energy conservation/supply

- Impact on efficiency in the use of energy
- Impact on energy use
 - Peak energy use
 - Off-peak energy use
- Impact on resource recovery and recycling
- Impact on energy production as a by-product of residuals management
- Impact on solar energy production

E. Amenities

1. Effect on visual amenities

- Preservation of scenic areas, the natural state of the environment, and open space.
- Height and bulk of structures required for or affected by the plan
- Visibility impact of clean air
- Appearance of urban landscape

2. Effect on historic and cultural resources

- Impact on historic landmarks, monuments, districts, archaeological sites, and other areas of historic or cultural significance
- Impact on sites with special water-related historical significance

3. Effect on noise

- Impact and location of transportation noise
- Impact and location of construction noise
- Special noise problems due to pollution reduction activity (e.g., trash collection, street sweeping)

4. Effect on odor

- Impact on type, strength, location and duration of odors

II. INSTITUTIONAL AND FINANCIAL CRITERIA

A. Financial

1. Direct costs of implementation

- Capital and replacement costs
- Operating/maintenance costs
- Administrative costs
- Costs of regulation, inspection, and enforcement

2. Fiscal effects on local government (assuming constant levels of State or Federal assistance)
 - Impact on general obligations, revenue or special assessment bonds and bonding capacity
 - Impact on property tax base
 - Impact on property tax rate
 - Impact on sales and other taxes
 - Impact on fees, licenses, and other user charges
 - Impact on connection and stand-by charges
 - Impact on Federal and State grant subvention funding dependence and eligibility
 - Impact on interest earnings and cash revenues

B. Institutional

1. Impact on the provision of public services
 - Type, level, and displacement of public service (e.g., police, fire, sewerage, etc.)
2. Effect on public agencies
 - Impact on intergovernmental responsibility and coordination
3. Implementability
 - Public acceptability
 - Organizational and political feasibility
 - Legal capability
 - Impact on existing plans, regulations, and policies
 - Complexity or simplicity of control measures and their implementation
4. Flexibility
 - Reversability of decision

III. ECONOMIC CRITERIA

A. Production of goods and services

1. Effect on industrial, commercial, agricultural, and service activity by categories (e.g., manufacturing, construction, transportation, etc.)
2. Effect on employment, unemployment, and underemployment
 - Impact on job creation and elimination by categories (e.g., professional, technical, crafts, etc.)

B. Income and investment

1. Effect on wages and salaries
2. Effect on rents
3. Effect on capital investment for new and replacement facilities or equipment
4. Effect on profits

C. Consumer expenditures

1. Effect on the prices of goods and services
2. Effect on consumption of goods and services

IV. SOCIAL CRITERIA

A. Housing Supply

1. Effect on existing housing stock
 - Impact on the removal of housing by demolition or conversion
 - Impact on housing quality
 - Impact on the cost of housing and rent
 - Impact on the cost of housing rehabilitation & maintenance

2. Effect on new housing stock

- Impact on the cost of new housing
 - Cost of land
 - Cost of site preparation
 - Cost of construction
- Impact on supply of new housing
 - Quantity of new units produced
 - Proximity to employment opportunities

B. Physical Mobility

1. Impact on public transportation

- Cost
- Time
- Convenience
- Purpose of trip

2. Impact on private transportation

- Cost
- Time
- Convenience
- Purpose of trip

C. Health and Safety

1. Effect on site hazards

- Impact on seismic safety and risk
- Impact on flood plain safety and flood risk

2. Effect on transportation conflicts

3. Effect on public health

D. Sense of Community

1. Effect on community character
2. Effect on community stability

E. Equity

1. Impact on individual opportunity and lifestyle
2. Impact on special population groups
 - Aged
 - Youth
 - Ethnic Minorities
 - Women
 - Low-income
 - Handicapped people
 - Individuals with special employment problems

F. Urban Patterns

1. Location of development
2. Density of development
3. Type of development
4. Timing of development

Chapter II

INDEX OF

AGENCY RESPONSIBILITIES



ABAG's member cities and counties vote on the draft Environmental Management Plan during the General Assembly in April 1978. Several regional, State and Federal agencies will also have responsibility for reviewing and evaluating the plan.

Representatives from all levels of government will want to know how the plan will affect their jurisdiction. Industry and the public will also be interested in the distribution of implementing assignments. This chapter is intended to answer such concerns. In it are organized the elements of the plan by implementing responsibility. Effective review of the plan should be helped because of its presentation in this way.

For example, the representative of a given city or county that is attending the ABAG General Assembly can look at this chapter and readily determine the following things:

- o Actions that the city or county will be responsible for specifically.
- o Actions that the city or county will be responsible for that apply generally to local governments in the Bay Area.
- o Actions that the city or county will be involved in as a member of ABAG - in other words, in conjunction and cooperation with other local governments of the region.
- o Actions that will affect the city or county because they are to be implemented by regional, state, and/or Federal agencies or legislative bodies.
- o Actions that are applicable to private implementing authorities, such as industrial firms.

The purpose of this chapter is to rearrange the information in Volume I so that General Assembly delegates and other reviewers will be able to make more informed judgments on the plan. To serve this purpose, all the actions and policies of the Environmental Management Plan (EMP) are organized by implementing agency.

It should be noted that this chapter is organized only by implementing agency. Actions are not organized by enforcement agency. The reason for this is that these agencies often have implementation responsibilities as well, and it would be confusing to the reader to lump the two sets of actions. Also, most enforcement actions would be carried out by a relative handful of agencies. The agencies with general enforcement authority are these:

Water Quality Management Plan - San Francisco Bay Regional Water Quality Control Board; California State Water Resources Control Board; and U.S. Environmental Protection Agency.

Water Supply Management Plan - none.

Solid Waste Management Plan - California State Solid Waste Management Board; California State Department of Health; and U.S. Environmental Protection Agency.

Air Quality Management Plan - Bay Area Air Pollution Control District; California Air Resources Board; and U.S. Environmental Protection Agency.

Several other agencies have more limited enforcement responsibilities. For example, the San Francisco Bay Conservation and Development Commission has the authority to issue permits which can affect vessel-related pollution at the region's harbors and marinas. ABAG, as another example, will review Federal grant applications for compliance with the Environmental Management Plan.

The cities and counties of the Bay Area will also be enforcement agencies. By approving the Environmental Management Plan at the ABAG General Assembly, local governments will be indicating an intent to carry out those actions in the plan for which they have implementation responsibility. They will thereby be acting as enforcement agencies.

Any jurisdiction with actions to be carried out by the plan will be interested in establishing priorities. Priorities such as these are not easy to determine. However, schedules for implementation are contained in the plan recommendation tables in Chapters III through VI of Volume I. If more guidance is needed, ABAG can work with officials of agencies and private industry to figure out more specific implementation priorities. ABAG can provide planning and engineering information to answer the more technical questions, such as:

1. How severe is the environmental problem addressed by the action?
2. How effective is the action going to be in solving the problem?
3. How much will implementation cost?
4. Will outside sources of funds be available to pay for implementation?
5. Which agencies will have to be dealt with during the implementation process?
6. What is the threat that outside sanctions might be imposed for failure to comply?

Elected officials will need to make the political judgments, such as acceptability of certain actions to an electorate and the locally approved methods of implementation. By combining the two sets of information, ABAG staff and local representatives should be able to develop implementation priorities quite readily.

ACTIONS APPLICABLE TO SPECIFIC CITIES AND COUNTIES

There are two groups of control measures in the Environmental Management Plan that apply to specific cities and counties of the Bay Area. Both are in the Water Quality Management Plan. They are:

- o The 20-year project list of municipal wastewater facilities.
- o The surface runoff portion of the Water Quality Management Plan.

These are discussed below.

In addition to the two groups, there are two individual control measures that would be implemented by specific cities and counties. One of them is in the Solid Waste Management Plan. Policy 18 in that plan is that "facilities for wastewater solids management should be constructed in conformance with the regional Wastewater Solids Plan and the Environmental Management Plan (208 plan)." Under this policy, Action 18.1 is to develop Step 1 facilities plans for wastewater solids management based on the regional Wastewater Solids Plan. This study will propose facilities for the East Bay Municipal Utility District, Central Contra Costa Sanitation District, City and County of San Francisco, and the Cities of San Jose/Santa Clara. Other wastewater agencies will develop their own facilities plans as necessary. The initial facilities plans are scheduled to be completed by December, 1978. These plans are being paid for by Federal and State grants as well as local funds. EPA and the State Water Resources Control Board will ensure implementation.

The other control measure is in the Air Quality Management Plan. The third group of proposals in this plan is for transportation controls. The general policy here is to "reduce motor vehicle emissions through transportation actions to reduce vehicle use." Under this policy, Action 13 seeks to implement an auto control zone in the San Francisco central business district to reduce traffic. The action would be implemented by the City of San Francisco by 1980 at a public cost of \$128,000.

The 20-Year Project List

The 20-year project list is located in Appendix B to Volume I. Because of its length, it is not repeated here. Reviewers are referred directly to Appendix B.

This list, which is required by Federal law, is intended to implement Policy 5 of the Water Quality Management Plan, which states "Provide facilities needed for municipal sewerage service and water quality protection." Action 5.1 under this policy is to "Expand existing and provide new facilities for municipal sewage collection, treatment and disposal." It is to be implemented by local sewerage agencies, acting

under their existing local ordinances and regulations. The plan estimates that all projects together will cost an estimated \$230,000,000 per year, financed mostly by Federal and State grants. None of this cost, though, is directly attributable to this plan because ongoing programs operating under Federal and State law require construction of these facilities to meet applicable standards. The San Francisco Bay Regional Water Quality Control Board can impose sanctions for non-compliance.

Specific projects in Appendix B are listed county by county. Each project is described, the implementing agency is named, and estimated costs are given for facilities planning, development of plans and specifications and project construction.

Implementing agencies include cities, special districts, and joint powers agencies. For example, the list for Alameda County includes projects undertaken by the City of Oakland, the East Bay Municipal Utility District (a special district), the East Bay Dischargers Authority (a joint powers agency), and many other sewerage agencies.

The Surface Runoff Plan

The surface runoff portion of the Water Quality Management Plan is also located in Volume I. Policy 8 in this plan is to "establish a program of surface runoff controls that emphasize low cost measures to reduce the pollutant load from this source." This policy is to be implemented by several actions listed in Volume I. These actions are taken from and act as a summary of the surface runoff plans developed individually by the Bay Area's counties.

Because the material in Volume I is a summary of the counties' plans, the actions listed below are a restatement of the plans themselves, not the regional summary. In this chapter, these actions are organized by county. Thus the reviewer should refer to the county or counties of interest.

The reviewer should be cautioned, however, against direct comparison of the county plans based on the information found in this chapter. Individual counties used differing definitions and assumptions in the preparation of their products, and this fact means that there is no consistent correlation among them. For example, the cost figures for related actions (e.g., street sweeping actions listed in the various plans) can not be compared directly; nor can they be totaled.

Alameda County

The "Surface Runoff Management Plan for Alameda County" was published as a final draft report on September 30, 1977. The plan contains the following recommendations.

1. Year 1 of the Alameda County plan runs from July, 1978 to June, 1979. During this time period, there is a "Phase I - Initial Plan" and a "Phase II - Continuing Planning Process."

The first phase includes several control measures. The first is to "adopt" surface runoff implementation principles." These are as follows:

- a. Public and private operation and maintenance practices should be conducted in accord with water quality objectives.
- b. Operation and maintenance budgets should be augmented as required to ensure that current (FY 1977-78) service levels be maintained for existing environmental enhancement practices.
- c. New public and private construction projects should incorporate actions that enhance water quality.
- d. Technical support should be provided to local environmental education programs to complement regional efforts.
- e. Ordinances and practices should be developed to promote and protect the integrity of county water resources.
- f. The use of cost effective non-structural solutions to reduce pollution should be promoted.
- g. Reseeding and grading programs and practices should be established which will provide adequate vegetative cover, thereby mitigating water and wind erosion.
- h. The maintenance of urban streets and parking facilities should be improved.
- i. Efforts should be encouraged towards learning more about water quality problems.

The recommendation is that these implementation principles be incorporated into the Conservation Elements of the General Plans of the county and its cities. The cost of this action is \$14,000, paid for out of Local funds.

An action to "implement public education programs would be undertaken by the county, ABAG and the resource conservation district. This action would be paid for out of local and regional funds, with non-local funds being required for implementation. Initial cost of implementation would be \$10,000, and the annual costs thereafter would be \$73,000.

Also in Phase I of the first year is the action to "continue 208 Technical Advisory Committee." Local agencies would implement this action, using local funds.

A further action is to "establish plan management staff." This would be done by the Alameda County Flood Control and Water Conservation District with local money. This would have an annual cost of \$62,000.

The next item is to "implement Castro Valley 208 demonstration project (Phase I)." This would be undertaken by the Alameda County Flood Control and Water Conservation District with local and Federal funds. The cost of this action is \$175,000.

This phase also seeks to "implement monitoring plan." The implementing agency is the Alameda County Flood Control and Water Conservation District, which would finance the action with Federal money, supplemented by local funds. The initial cost is \$34,000, and the annual cost is \$61,000. Non-local funds would be required for implementation.

Another action is to "draft watercourse protection ordinance" so as to attack the problem of debris in creeks caused by illegal human activity. This would be done by the Alameda County Flood Control and Water Conservation District.

The plan would "implement oil recycling program." This action would address the problem of illegal dumping of oil and grease. Implementing agencies would be the cities and the county, led by the Solid Waste Management Joint Powers Authority. The initial cost of \$10,000 and the annual cost of \$73,000 would be paid for out of State funds.

Finally in Phase I of the first year, there would be an evaluation of the program's effectiveness so as to determine if next year's control measures are needed. This action would take place every year in conjunction with the plan update. Its cost is assumed under the action listed above to "establish plan management staff."

Phase II in the first year is the continuing planning process. In this phase, the plan would "investigate public works maintenance, operation and construction practices." This is done by the Alameda County Flood Control and Water Conservation District, and in fact is an existing District program.

In this phase, the plan would seek to "evaluate agricultural chemical use practices." This would be done by the County Agricultural Commission and the resource conservation district. The initial cost of \$5,000 would be financed by local money.

Another action is to "investigate hazardous material spill program." The Alameda County Flood Control and Water Conservation District would do this with local and Federal funds.

The last action in this phase is to "investigate non-local funding sources." This would be undertaken by the Alameda County Flood Control and Water Conservation District and the resource conservation district, using local and Federal funds.

2. The second year of the plan is likewise divided into a "Phase I - Initial Plan" and "Phase II - Continuing Planning Process." Year 2 runs from July 1970 to June 1980.

The first action in Phase I of the second year is to "regulate land use in sensitive areas." This would be done by city and county planning departments. The initial cost of \$14,000 would be covered by local funds.

The next action is to "implement Castro Valley demonstration (Phase II)." The Alameda County Flood Control and Water Conservation District would do this with local and Federal money.

This phase would also seek to "adopt and enforce watercourses protection ordinance." Cities would adopt the ordinance, and enforcement would be by the Alameda County Flood Control and Water Conservation District, the Mosquito Abatement District, and the County Health Department. Local and state funds would pay the annual enforcement cost of \$106,000. Non-local funds are required for implementation.

To deal with the problem of bacteria and heavy metal accumulation on streets, the plan contains an action to "draft street sweeper operator training program." This would be done by the Alameda County Flood Control and Water Conservation District. The cost of \$15,000 would be paid out of local funds.

The subsequent item is to "implement street sweeper operator training program and adjust schedules." This would be undertaken by the cities and the county, led by the Alameda County Flood Control and Water Conservation District. Local funds would pay for this action.

The next control measure is to "revise grading and fill control ordinances for urban and rural areas. Implementing agencies are the Alameda County Flood Control and Water Conservation District and the resource conservation district pursuant to ongoing programs. Federal funds would be required. Initial cost is \$16,000, with annual costs of \$14,000.

Also under this phase of the second year's program is an action to "activate animal management advisory committee." This would be done by the County Field Services and the resource conservation district with local money.

Finally, the litter problem would be dealt with by an action to "develop anti-litter program." The Solid Waste Management Joint Powers Authority would do this with state funds. Initial cost is \$5,000.

As in the first year, the second year's Phase II is the continuing planning process. The first action here is to "investigate exfiltration problems" so as to address the problem of bacteria caused by sewer line failures. This would be done by the County Environmental Health Agency with local, State and Federal funds. Non-local funds are necessary for this action to take place. Costs are as yet undetermined.

The next control measure is to "investigate neighborhood composting program." This would be undertaken by the cities and the county, led by the Solid Waste Management Joint Powers Authority. Local and State funds would be used.

Also listed is an action to "develop program of agricultural erosion control", implemented by the resource conservation district. State and Federal money would pay for the \$20,000 initial cost.

The last item in this phase is to "investigate use of stormwater detention facilities. This would be done by the Alameda County Flood Control and Water Conservation District with local funds. Costs to implement this action are assumed under the action listed above to "establish plan management staff."

3. Year 3 of the Alameda County Plan extends from July 1980 to June, 1981. Two control measures are listed under "Phase I - Initial Plan." The first of these is to "enforce prohibition on dumping or discharge into inlets." The city and county police departments would do this with local funds. Initial costs are \$14,000, and annual costs thereafter are \$14,000.

The second control measure is to "establish animal management standards." Implementing agency is the county. Local funds would cover the initial costs of \$5,000.

"Phase II - Continuing Planning Process" for the third year contains 4 items. The first is to "investigate expansion of parking controls" related to effective street sweeping. This would help reduce bacteria and heavy metal contamination on streets. The cities and county would implement this measure with local, State and Federal funds. The initial cost is \$4,000, and annual costs are \$14,000. Non-local funds would be required for implementation.

Also in this group of control measures is one to "investigate detention and/or treatment of runoff." This would be undertaken by the cities and county, with local funds covering the initial cost of \$14,000 and the annual costs of \$14,000.

A third action seeks to "divert runoff away from contaminated areas." The cities and county would do this. Local funds would finance the initial cost of \$14,000 and the annual costs of \$14,000.

Finally in the third year is a control measure to "investigate additional cleaning of catchbasins and inlets." Implementing agency is the Alameda County Flood Control and Water Conservation District. Initial cost of this action is \$720,000, annual costs are \$162,000, and financing is by local, State and Federal funds. State and/or Federal funds would be required.

4. No actions are scheduled for the fourth year of the Alameda County program.

5. During the fifth year, which extends from July 1982 until June, 1983, the only control measure listed is to "investigate additional storm drainage channel cleaning." This would be done by the Alameda County Flood Control and Water Conservation District. Local, State

and Federal money would pay for the initial cost of \$250,000 and the annual costs of \$775,000. Non-local money would have to be available for implementation.

6. No actions are scheduled for the sixth year.

7. The seventh year is the last for this plan. It is from July 1984 to June 1985. The one action is to "investigate increasing service of street cleaning." Cities and the county would do this. The initial cost is \$680,000, the annual cost is \$592,000, and financing would be by local money, supplemented by necessity with State and/or Federal funds.

Contra Costa

The "Contra Costa County Surface Runoff Management Plan" (Final Draft - October 14, 1977) contains a set of control measure recommendations, accompanied by the designation of implementing agencies for each measure. Costs and financing for the control measures are not included in the plan. Nor is an implementation timetable shown.

The control measures and implementing agencies are as follows:

1. For the control measure "provide more frequent street sweeping," the county's recommendation is to encourage the county and cities to review sweeping schedules in densely populated and commercial areas to determine if a more efficient schedule can be devised. Suburban shopping centers with large parking lots should also be swept, with emphasis on the days preceding an expected storm. Implementing agencies are the county, via county service areas, and cities.

2. For the control measure "provide more efficient methods of street cleaning," the county recommends that if training programs are offered, agencies should participate. The recommendation is also to encourage agencies which contract sweeping to review specifications for opportunities for greater efficiency. At the time equipment is replaced, agencies should consider the benefits of purchasing high efficiency sweepers, brushes and other devices. Implementation is by the county, via county service areas.

3. For the control measure "repair streets," the recommendation is to maintain existing practices and to include water quality benefits as a consideration in street repair guidelines. Implementation is by the county, special districts and cities.

4. For the control measure "control certain chemicals," the plan recommends that this be included in a regional public education program. Individual choice to avoid improper disposal of hazardous materials, the plan says, is believed to be the most effective low-cost, long-term control measure. Implementing agencies are the County Health Department and the County Department of Agriculture.

5. For the control measure "restrict auto parking," Contra Costa's plan recommends the maintenance of existing practices and the expansion of this program on a voluntary basis to other swept areas. Implementation is by the county, via county service areas, and the cities.

6. Under the control measure "control use of lots and streets," the plan recommends that existing levels of enforcement be maintained and that stronger enforcement should be considered if a problem area develops. The county and cities have ordinances preventing car repair outdoors in residential areas. Enforcement is very difficult. Violations are isolated and infrequent, but, when identified, may be persistent. Car washing is permitted as an auxiliary residential use. Implementation of this recommendation is by the county and cities.

7. Under "control dumping," the plan recommends that present practices be maintained and that enforcement be increased to the highest practical level where needed. Implementing agencies are the State, the Regional Water Quality Control Board, the county, and possibly water districts and/or the County Health Department.

8. Under "control littering and dog droppings," the plan recommends the maintenance of present levels of litter control and that litter and dog droppings control enforcement should be increased in areas in which it is perceived as a problem. Implementation is by the county and cities.

9. For the control measure "control automobile and other emissions," the plan indicates that this is considered by ABAG and not by the local agencies.

10. Under "control direct discharge of pollutants," the plan has four recommendations:

- a. Maintain existing level of enforcement.
- b. Encourage cities to increase enforcement in problem areas.
- c. Include in regional public education program.
- d. In areas where illegal dumping is perceived as a problem, adequate trash pickup, recycling centers, or other options for legal and safe disposal should be developed.

Dumping without a permit is a violation of State law (in State waters), city ordinances, and county regulations for public health. The plan says that individual choice, plus provisions of legal disposal means, is believed to be the best long-term control. Implementing agencies are the county, cities, and the County Health Department.

11. For "clean storm water systems," the recommendation is to maintain present levels of maintenance as funds permit. As presently practiced by the county and cities, cleaning and bush removal on an as needed basis is keyed to the rainy season. This practice is to maintain channel and drain capacity. Implementation is by the county and cities.

12. Under "replace cross connections of sewerage systems," the plan indicates that if cross connections are found to exist, this control should be considered as an alternative to constructing sewage treatment capacity, based on cost/benefit studies. Cross connections are not known to exist to any significant extent in the county. There may be some illegal connections. Implementing agencies are the county, cities, and sewerage agencies.

13. For the control measure "insure proper operation of septic tanks and leach fields," the plan recommends to continue the present practice of setting moratoria in troubled areas by the State and County Health Departments. If new construction techniques are developed, they should be considered for approval by the County Health Department. According to the plan, there are no reports of areas of the county in which inadequate maintenance is causing surfacing of effluents, except areas now under moratoria. Implementing agency is the county.

14. For the measure "rechannel runoff to prevent flow over critical surfaces," the plan's recommendation is to include this in guidelines for project review. Also, the measure is appropriate for future consideration on a case-by-case basis in local areas. The plan comments that this control may be appropriate for the construction period as well as for the life of the project, and that it may be considered on abandoned properties. Implementing agencies are the county, cities, and the San Francisco Bay Regional Water Quality Control Board.

15. Under the control measure "remove debris in channels, pipes and inlets to improve flow," the plan's recommendation is to keep present practices to maintain flow characteristics. Implementation is by the California Department of Transportation, the county, and cities.

16. For the measure "regrade disturbed areas," the plan is to maintain the present practice on a limited scale. The measure is appropriate for future consideration on a project by project basis. Implementation is by the California Department of Transportation, the county, cities, and local water and parks districts.

17. For the measure "reseed or apply vegetative cover to bare slopes," the plan's recommendation is three-fold:

- a. Existing practices should be maintained. The action should be an Environmental Impact Report criterion and a project review guideline.
- b. The action is appropriate for future consideration on a project or site basis.
- c. Land owners and the local resource conservation district should be encouraged to work to prevent excessive soil losses.

Implementation is by State highway and parks agencies, the county, cities, local water and parks districts, resource conservation districts, and other public entities that own property.

18. Under the control measure "stabilize channels of rivers and streams," the plan recommends the maintenance of present practices on a limited scale, that such considerations be included in Environmental Impact Reports, and that the action be included in future considerations as a project design alternative. Implementing agencies are the U.S. Army Corp of Engineers, reclamation districts, the county, cities, and local water and park districts.

19. Under "control erosion at construction sites," the plan recommends that existing practices be maintained to some extent, that the action be included in project review conditions of approval, and that agencies be encouraged to review present practices to determine if better enforcement is needed. For long term benefits, implementation should be coordinated with revegetation programs. Implementation is by State highways and parks agencies, the county, cities, and special districts.

20. For "regulate construction of activities in time or space," the plan recommends the minimization of soil exposed during the rainy season. With the exception of emergency repairs, grading and laying of foundations in this climate region is required and/or customary during the dry season. Implementation is by State highways and parks agencies, the county, cities and special districts.

21. Under "construct berms for critical sources," the recommendation is to continue present practices as required by the Regional Water Quality Control Board for feedlots, to continue present practices in heavy industrial areas, and to implement the action as a new project review guideline with project approval conditions. If the flow of runoff from critical sources (e.g., gas stations, garages, and feedlots) is directed to sewer lines, the treatment plant may not accept the waste or remove certain substances. Implementation of the action is by the State, the Regional Water Quality Control Board, the county and cities.

22. Under the control "use energy dissipators to reduce potential of erosion or transport of solids," the plan recommends the continuation of present practice on a limited scale by the county and possibly by park districts. The plan also describes this as a flood prevention alternative. Implementing agencies are the county, cities (possible but rarely), and special districts.

23. For "require minimum of pervious surfaces for new construction," the plan's recommendation is to maintain present practices as established by county and city regulations pertaining to the maximum allowable lot coverage (except in some commercial districts). Implementation is by the county and cities.

24. Under the measure of "impound runoff in upstream channels," the plan recommends continuation of existing practices to a limited extent as an alternative to channelization. The county and cities (possible but rarely) would implement this action.

25. Under "construct on-line or off-line storage," the issue has to do with construction of aboveground or underground storage facilities to which stormwater flow can be diverted and released after the peak storm flow. The plan is that on-line storage is not recommended, but that off-line storage should continue as an existing practice to some extent as an alternative to channelization. Off-line storage, however, is not recommended for water quality purposes. The county would implement this control measure.

Marin County

The "Marin County Surface Runoff Management Plan" (August, 1977) contains a set of control measures that have been classified according to different levels and phases. Level One control measures, which are the most detailed in the plan, are those which are low-cost and easily implemented. They are implemented in Phase One, which extends from October 12, 1977 to June 30, 1979. Level Two control measures are relatively low-cost but may involve other problems during implementation. Level Three controls are moderately costly and involve potentially serious non-financial implementation problems. Levels Two and Three control measures would be implemented during Phase Two (July 1, 1979 to June 30, 1981) and Phase Three (July 1, 1981 to June 30, 1983). Level Four involves high-cost measures that would encounter serious implementation difficulties. Level Four controls would be implemented only if all other efforts did not succeed in meeting Federal and State standards; implementation would be during Phase Four, which is after July 1, 1983.

Each Level One control measure is listed and described below. Implementing mechanisms for these measures are also included. Control measures in Levels Two, Three and Four are then listed. The plan does not contain a discussion of implementation costs.

1. Level One Urban Control Measures

The Level One control measures for urban areas, i.e., those to be implemented during Phase One are these:

- a. Institute a media approach to educate the public to reduce surface runoff pollution. This would be implemented by the Regional Water Quality Control Board, ABAG, and local building inspection departments. The schedule for implementation calls for a list of erosion control measures to be drafted and then attached to building and grading permits by January 1, 1978. Financing is by Federal and State grants.
- b. Place a ban on streetside parking to allow access by street sweepers. This would be implemented by local police and public works agencies by July 1, 1978. Financing would be from the State gasoline tax, the parking violation fund, and perhaps through the Urban Mass Transportation Administration.

- c. Concentrate sweeping efforts in highly contaminated areas. This control measure, implemented by local public works departments, is already in effect.
- d. Repair chuckholes, etc. in street surfaces. This action would be undertaken by Caltrans and local public works departments in a continuing maintenance program. Financing would be by the State Gasoline Tax, Vehicle Code fines, and Sales Tax revenues.
- e. Remove materials collected in catchment basins. This control would seek to evaluate the efficiency of present methods, develop a work program, request funding, and implement any additional action by July 1, 1978. Implementing agencies would be local and public works departments. The activity would be paid for by local general funds and property taxes.
- f. Remove obstruction, debris and pollutants from storm drain systems. Local public works departments would do this in association with their catch basin programs (described under "e" above). Financing would be with local general funds and property taxes.
- g. Enforce existing ordinance requirements to control erosion during and following construction grading. Local public works departments would have this responsibility. If such ordinances are not in existence, the following schedule of action would apply:
 1. Evaluate need by January 1, 1978.
 2. Draft ordinance by April 1, 1978.
 3. Adopt and implement by July 1, 1978.

If an applicable ordinance is already in effect, this schedule would apply:

- 1. Evaluate for compliance by January 1, 1978.
- 2. Implement for compliance by April 1, 1978.

Implementation would be paid for out of local general funds, property taxes, and development fees.

- h. Improve roadside drainage by debris removal, dredging of culverts, and drain pipe installation so as to prevent erosion. Implementation of this action would be by local public works departments and Caltrans. To implement this action, problem locations would be inventoried by January 1, 1978, such locations would be put into priority by April 1, 1978, and construction crews would be trained by July 1, 1978. The financing mechanisms would be the State Gasoline Tax, Vehicle Code fines, local general funds, and property taxes.

- i. Open space management so as to preclude a more intensive use of land and its consequent pollutants. Implementing agencies are the Marin County Parks, Recreation and Open Space District, State Parks and Recreation Department, and the National Park Service. Financing would be by a county \$.10/100. annual tax to purchase and maintain open space land and/or via Federal and State purchase.

2. Level One Rural Control Measures

The Level One control measures for rural areas, i.e., those to be implemented during Phase One, are these:

- a. Institute a media approach to educate the public to reduce surface runoff pollution. This would be implemented by the Regional Water Quality Control Board, ABAG, and local building inspection departments. The schedule for implementation calls for a list of erosion control measures to be drafted and then attached to building and grading permits by January 1, 1978. Financing is by Federal and State grants.
- b. Develop and adopt performance standards within municipal water supply districts watersheds. These would be standards to be met when development occurs within water supply watersheds to insure water quality. Implementing agencies are county public works departments, municipal water districts, parks, recreation, and open space districts, the farm advisor, local building inspection departments, the county agricultural commissioner, and county counsel. A committee to develop the standards would be established by January 1, 1978, the standards would be developed and either a new ordinance would be drafted or amendments to existing ordinances would be developed by April 1, 1978, and the County Board of Supervisors would adopt the ordinance (or amendments) by July 1, 1978. Financing is by local general funds.
- c. Enforce existing ordinance requirements to control erosion during and following construction or grading. Local public works departments and Caltrans would implement this measure. Existing county practices would be evaluated for compliance by January 1, 1978, and implementation for compliance would be effected by April 1, 1978. Financing would be by local general funds, property taxes, and development fees.
- d. Repair chuckholes, etc. in street surfaces. This action would be undertaken by Caltrans and local public works departments in a continuing maintenance program. Road crews would be trained in more effective debris removal practices in landslide areas (i.e., Bolinas Lagoon and Highway 1) by January 1, 1978. Financing mechanisms would be the State Gasoline Tax, Vehicle Code fines, and sales tax revenues.

- e. Improve roadside drainage by debris removal, dredging of culverts, and drain pipe installation so as to prevent erosion. Implementation of this action would be by local public works departments and Caltrans. To implement this action, problem locations would be inventoried by January 1, 1978, these locations would be put into priority by April 1, 1978, and construction crews would be trained by July 1, 1978. The financing would be from State Gasoline Tax funds, Vehicle Code fines, local general funds, and property taxes.
 - f. Open space management so as to preclude a more intensive use of land and its consequent pollutants. Implementing agencies are the Marin County Parks, Recreation and Open Space District, State Parks and Recreation Department, and the National Park Service. Financing would be by a county \$.10/100. annual tax to purchase and maintain open space land and/or via Federal and State purchase.
 - g. Support the Regional Water Quality Control Board guidelines for the protection of water quality from animal wastes. These guidelines call for pollution control facilities such as drainage control, ponds, and stall barns. The control would be implemented by the Regional Water Quality Control Board, and all dairy operations would be in compliance with these guidelines by September 1, 1978.
 - h. Regulate the use and application of chemicals. This action would be implemented by the county agricultural commission, the public works department, the farm advisor, the mosquito abatement district, municipal water supply districts, and Caltrans. To do this would involve an identification of chemicals to be controlled and the development of standards for effective application techniques by public works crews in efficient application and the attachment of information sheets to spray permits issued for agricultural use by April 1, 1978. Local general funds would pay for this action.
3. Level Two Urban Control Measures
- a. Train operators in sweeper efficiency.
 - b. Increase frequency of sweeping.
 - c. Train work crews in the use of chemicals.
 - d. Enforce litter laws.
 - e. Establish recycling programs.

f. Eliminate cross-connections of storm drains with sanitary sewers.

g. Prohibit roof drains from entering storm drainage system directly.

4. Level Two Rural Control Measures

a. Enforce litter laws more strictly.

b. Adopt performance standards in all watersheds.

5. Level Three Urban Control Measures

a. Encourage inter-jurisdictional sharing of equipment and manpower for street sweeping and the cleaning of catch basins and storm drains.

b. Prohibit the use of certain chemicals.

c. Clean up vacant lots.

d. Prohibit sale of non-returnable containers.

e. Collect residential landscape debris.

f. Establish neighborhood composting areas.

g. Establish private horse grazing restrictions.

h. Eliminate existing connections of roof drains to storm drainage.

i. Require diversion of runoff around highly contaminated areas.

j. Regrade and revegetate disturbed areas.

k. Stabilize stream channels and banks.

6. Level Three Rural Control Measures

a. Prohibit the use of certain chemicals.

b. Prohibit sale of non-returnable containers.

c. Place restrictions on private horse grazing.

d. Regrade and revegetate disturbed areas.

e. Stabilize stream channels and banks.

- f. Plant in critical areas.
- g. Manage pasture and rangelands.
- h. Establish a system of conservation cropping.
- i. Improve woodland forestation.

7. Level Four Urban Control Measures

- a. Purchase new sweeping equipment.
- b. Begin street flushing.
- c. Retain runoff on rooftops.
- d. Retain runoff in highly contaminated areas.
- e. Impound runoff in upstream channels.
- f. Enhance surface runoff retention and infiltration.
- g. Construct off-line storage (ponding).
- h. Use excess capacity of sewage treatment plants.
- i. Construct treatment facilities for surface runoff.
- j. Control the use of autos.
- k. Control land development patterns.

8. Level Four Rural Control Measures

- a. Implement diversions and ditches.
- b. Construct a conservation irrigation system.
- c. Implement runoff and sediment control by ponds and basins.
- d. Establish waste management systems.
- e. Control land development patterns.

Napa County

The Napa County Surface Runoff Management Plan was published on October 12, 1977. The plan contains problem descriptions, policies and actions that apply during both Phase I, extending from November 1977 to June 1979, and Phase II, which runs from July 1979 to June 1983. The plan indicates that control measure actions for Phase II will be developed in more detail as needed during the implementation period of the Phase I actions. The plan's actions are these:

1. For the problem involving evidence of septic tank effluent in Edgerly Island drainage ditches, the policy is that the effluent should be eliminated at its sources. The Phase I action is to determine the most effective treatment technique and apply for a "201" grant. The Phase II action is to construct the appropriate facility and eliminate septic tank systems. This problem has been under investigation, and a sewage collection and treatment facility is proposed. Implementing agency for this actions is the County Division of Environmental Health. The Phase I action is being paid for out of general county revenues, and the cost of Phase II has yet to be determined. Federal and State grants may be available to help pay for the facility construction.

2. For the problem involving evidence of septic tank effluent in the drainage swale near Auction Yard-Tower Road Area, the policy is that the effluent should be eliminated at its sources. The proposed action, which would be ongoing through Phases I and II, is to locate the source, require improvements, and continue surveillance. The plan indicates that these actions are typical and apply to other areas which have undergone development. Implementation would be by the County Division of Environmental Health. General county revenues would pay for the action.

3. For the problem of high coliform counts in Conn Creek at Lake Hennessy, the policy is to locate the source(s) and reduce coliform populations there. The Phase I actions are to sample at Conn Creek and to determine the magnitude of the problem.

Sampling is to be done during the 1977-78 rainy season in order to locate the non-point or point sources. Phase I controls would make use of existing regulations. During Phase II, a supplemental control program would be developed if control of the problem is not well underway at the end of Phase I. Sampling during Phase I would be done by the County Department of Public Works, and other implementing actions would be by the County Division of Environmental Health. Phase I actions are estimated to cost \$5,500 - \$3,500 for sampling, and \$2,000 for determining the magnitude of the problem. Financing of Phase I is by redirected surface runoff contract funds and/or general county revenues. Phase II costs have not yet been determined but would be covered by county general revenues.

4. For the problem that boron values in the upper Napa River sometimes exceed irrigation standards, the policy is to reduce the boron values to acceptable levels. The Phase I action is to locate the sources through the Upper Napa River Baseline Water Quality Analysis. This action would cost \$200 and be paid for out of county general revenues. It would be implemented by the Napa County Flood Control and Water Conservation District.

The Phase II action is to reduce discharge at the sources through voluntary efforts and existing regulatory powers where necessary. This action would be implemented by the Napa County Flood Control and Water Conservation District, the County Conservation, Development and Planning Department, and the City of Calistoga. Costs of Phase II have not been determined, but they would be paid for out of general revenues.

5. For the problem of algae bloom and low dissolved oxygen in the lower Napa River, the policy is to reduce the suspended solids and Biological Oxygen Demand in the Napa River basin. Three actions would be taking during Phase I. These are:

- a. Periodically review water quality monitoring reports. These reports are the final monitoring phase of the Napa Sanitation District's Napa River Study Program, the Napa Sanitation District's water quality monitoring program required by the Regional Water Quality Control Board, and the (Upper) Napa River Baseline Water Quality Analysis. Implementing agency for this action is the Napa County Flood Control and Water Conservation District. The cost of \$200 would be paid for out of general revenues.
- b. Review existing practices for low or no cost opportunities to reduce water pollution caused by surface runoff. This action involves the revision of street sweeping schedules to emphasize leaf pickups during fall and winter, the emphasis on check dams and/or sedimentation basins at construction sites, the deferring of seeding of cut and fill slopes to just prior to the rainy season, the encouragement of pasture management to reduce overgrazing, and the encouragement of streambank protection and stabilization. Implementing agencies include all local agencies, including the Resource Conservation District. Projected costs, paid for out of general revenues, are \$3,200 for the City of Napa, \$1,400 for the City of Yountville, \$1,200 for the City of St. Helena, \$1,400 for the City of Calistoga, \$3,000 for the County, and nothing above normal agency operations for the Resource Conservation District.
- c. Obtain and distribute information on surface runoff control standards and options. This information would describe options such as criteria for grass seeding and other low cost erosion controls, the rescheduling of street sweeping, and criteria for installing a silt basin. Implementation would be by the County Department of Public Works and the Napa County Flood Control and Water Conservation District. Phase I costs of \$500 would be paid for out of redirected surface runoff contract funds.

In addition, two further actions would be undertaken during Phase II. These are:

- a. Analyze water quality monitoring reports. This action would determine the condition and trend of water quality based upon Phase I sampling. It would also determine if additional control measures are necessary. The

implementing agencies are the Napa County Flood Control and Water Conservation District and the Regional Water Quality Control Board. Costs would be paid for out of general agency revenues.

- b. Prepare and implement necessary additional control measures. The selection of control measures would be based upon the magnitude of problems and their trends. The Napa County Flood Control and Water Conservation District and the Regional Water Quality Control Board would implement this action. Planning and preparation costs would be paid for out of general revenues. Demonstration projects, if necessary, would presumably be funded out of a Federal/local formula of 75%/25%.
6. For the problem of algae growth plus stratification in fresh water reservoirs, the policy is to reduce growth and stratification where practical. The Phase I action is to determine the magnitude of the problem in Rector, Milliken, Hennessy and Bell Canyon reservoirs. Owners would continue monitoring sufficiently to determine the magnitude of the problem, and, if necessary, to determine control measures. Implementation is by the Yountville Veterans Home and the Cities of Napa and St. Helena. Planning and preparation costs would be paid for out of general revenues. Demonstration projects, if necessary, would be paid for by Federal/local funds in a 75%/25% match.
7. For the problem of degraded water quality in streams, drainage channels and the Napa River due to illegal dumping of refuse, the policy is to improve the water quality. Phase I's action would be to give notice to property owners responsible for illegal dumping in watercourses to remove refuse or face court action. The Division of Environmental Health would undertake this action, with any implementation costs to be paid for out of normal agency operating funds.
- During Phase II, there would be two actions. The first is to determine the magnitude of the problem and the effectiveness of existing controls. Local agencies would conduct field surveys to quantify the rate of dumping and its impact upon water quality. Existing ordinances and practices would be reviewed. Implementation would be by the Napa County Flood Control and Water Conservation District, the Division of Environmental Health, and the county's cities. General revenues would pay the costs.
- Also under Phase II, the action to implement additional controls if existing ones are deemed insufficient would be taken. This would involve revising ordinances and/or increasing money and manpower. Responsible property owners could be billed for cleanup by public agencies. Implementing agencies would be the Napa County Flood Control and Water Conservation District, the Division of Environmental Health, and the county's cities. Costs for implementation would be covered by general revenues.

San Mateo County

The final draft of the San Mateo County Surface Runoff Management Plan was published in September 1977. The plan contains a lengthy set of recommendations. All have implementation schedules, and most (noted below) have information on costs and financing mechanisms. The plan's recommendations are organized by problem. Seven problems are identified.

1. The first problem is that of accumulations of debris and vehicle wastes. There are five recommendations to deal with this problem. The first is to establish an interagency program to determine more clearly persistent problem areas and to coordinate field survey findings in target areas. Implementing agencies are the 208 Steering Committee (at the county level) and a Technical Subcommittee. The program would operate between November 1977 and June 1983. See under "5" below for program cost. Financing is by agency resources.

The second recommendation is for a program to encourage improved vehicle construction and design standards, to reduce oil leakage, toxic exhaust emissions, and other vehicle byproducts. Implementing entities are the Federal or State governments and private industry. Implementation is scheduled by June 1978. Costs and financing are not given.

The third recommendation is to establish a prevention program to solve this problem. There are six parts to this recommendation. The first part is to establish a nationwide public education program to encourage proper use and disposal of oil, litter, garden waste, pesticides and fertilizers. Implementing agencies are the counties (including San Mateo County) and ABAG. This action would take place from September, 1977 to June 1983 and has a first year cost of \$14,244.

The second part of this recommendation is to establish a pilot education program as a test of education techniques to benefit specific water quality problem areas. This would be done by the County Lead Agency and ABAG in conjunction with the pilot area cities of Brisbane, Foster City, Redwood City and San Mateo. The program would take place from September 1977 to June 1979 at a cost of \$57,338. Financing would be by local agencies, ABAG and a possible demonstration grant.

The third part of the third recommendation is to develop model approaches to litter and dumping controls. This would be done by the County Lead Agency and the 208 Steering Committee between October, 1977 and June 1979. Cost of the item is \$6,988, with financing by local agencies and remaining 208 planning funds available to the county.

The fourth part is to develop model approaches to oil recycling, including suitable locations, methods and public education. Implementation agencies are the County Lead Agency and the 208 Steering Committee. The action would take place between October 1977 and June, 1979 at a cost of \$7,210. This would be paid by local agencies and remaining 208 planning funds.

The fifth portion of this recommendation is to develop a program of specific implementation steps to implement the model approaches and public education described above. This would be done by the counties (including San Mateo County), ABAG, the 208 Steering Committee, and the County Lead Agency. Cost of this action is included in the previous three portions of this recommendation.

The last part of the third recommendation for designated agencies is to undertake plan implementation program with adjustments to reflect the plan's annual review and update. Implementing agencies are to be determined, depending on the plan, but would include ABAG, the county's cities, the county, local special districts, the San Mateo County Flood Control District, and the mosquito abatement district. This would take place between June 1979 and June 1983. Costs are undetermined as yet, and financing is local.

The fourth recommendation is to establish an implementation program to improve the water quality benefit of existing clean-up programs for storm inlets, streams, or channels. There are three parts to this recommendation. The first is to develop model approaches to cleaning storm inlets, catchbasins, drainage pipes, channels and streams. This would be done by the County Lead Agency and the 208 Steering Committee. The schedule for this action is June 1970 to June 1980. Costs are not given in the plan, but financing would be local.

The second part is to develop a program to implement the model approaches above. This would be done by the County Lead Agency and the 208 Steering Committee by June 1980. Financing is local.

Lastly, there is a part to implement the recommendation program with adjustments to reflect annual review and update. This would take place between June 1980 and June 1983, with agencies, costs, and financing to be determined.

The final recommendation for this problem is to establish a program to improve the water quality benefit of existing street sweeping programs. Total cost for all parts is \$7,800 with financing by local agencies and remaining 208 funds. There are five parts to this recommendation.

The first part is to develop the means to help local jurisdictions maintain high levels of street sweeping, especially during the rainy season. This program would examine cooperative services, scheduling, and financial arrangements. Implementation would be by the County Lead Agency and the 208 Steering Committee between October 1977 and June 1979.

The second part is to develop model approaches to reduce on-street parking while sweeping takes place. The program would examine optimum street sweeping schedules and/or parking regulations. It would be implemented by the County Lead Agency and the 208 Steering Committee between October 1977 and June 1979.

The third is to develop the means to help local jurisdictions increase the pickup of fine particles when sweeping. The program would examine means to finance improved equipment, operator training, and optimum use of existing equipment and personnel. Implementation agencies are the County Lead Agency and the 208 Steering Committee. The action is scheduled from October 1977 to June 1979.

The fourth part of this recommendation is to develop a program to implement these model approaches and methods. This would be done by the County Lead Agency and the 208 Steering Committee. Interim recommendations would be made by June 1978, and others by June 1979.

The last portion of this recommendation is to implement the recommendation program with adjustments to reflect annual review and update. The county and its cities would do this by making interim recommendation before August 1978 and others by August 1979.

2. The second problem addressed by the plan is that of erosion and siltation. There are three recommendations. The first is to determine more clearly the locations of significant erosion and siltation by means of an interagency program to coordinate field survey findings in target areas. This would be done by the 208 Steering Committee and the Technical Subcommittee between November 1977 and June 1983. See under "5" below for program cost. Financing is by agency resources.

The second recommendation to solve this problem is to establish a program to improve erosion and runoff controls in areas with existing or potential problems. There are three parts to this recommendation. The first is to establish a program to improve existing erosion and runoff control practices in the unincorporated coastal areas. This program would be coordinated with local coastal planning efforts to implement best management practices in this area. Elements of this program include:

- o Identifying and analyzing existing county policies, practices and programs (October 1977 to June 1978).
- o Developing recommendations and aids for improvements (October, 1977 to December 1978).
- o Implementing recommendations (December 1978 to June 1980).
- o Distributing fundings to other jurisdictions (December 1978 to June 1979).

Implementing agencies of this program are the county and the 208 Steering Committee. Cost of the action is \$16,168, with financing from the Local coastal program grant and remaining 208 funds.

The second part of this recommendation is to develop and adopt an Area Plan for the Brisbane Watershed which addresses siltation. The county would implement this at a cost of \$35,000. Funding sources are the county and county service area.

The third part of this recommendation is to develop and implement recommendations for further work with adjustments to reflect annual review and update. The completion of this action is dependent on the determination of locations of significant erosions and siltation. If undertaken, implementing agencies would be the county and the 208 Steering Committee. The schedule is that this would be done between June 1979 and June 1983. Costs and financing are undetermined as yet.

The third recommendation for this problem is to develop and implement flexible road standards for sensitive areas. This recommendation has two parts, the first of which is to develop and adopt a model manual for implementing flexible road standards that can reduce runoff. This would be done before December 1978 by the county. County funds would pay whatever costs may be involved.

The second portion of this recommendation is based on the success of the previous action. Because other jurisdictions may have sensitive areas where flexible road standards should apply, this action would seek to develop such recommendations for other areas in the county. Implementing agencies are the county lead agency and the 208 Steering Committee, who would undertake the action between June 1978 and June 1980. Local funds would pay for it.

3. The third problem which this plan seeks to approach is that of sewer line infiltration and failure. There are two recommendations to this end. The first is that Federal and State aid for infiltration/inflow analysis as well as sewer line repair or replacement be continued. Several areas in the county still need this help to study sewer lines and to develop a repair program to prevent sewage spills into drainage ways. Implementing agencies for this recommendation are the State and Federal governments and local agencies. Implementation is scheduled for June 1978. Costs and financing are not mentioned in the plan.

The second recommendation is to establish a program to determine more clearly the cause and locations of problem areas. This would be a cooperative program to isolate sewage leaks, particularly near special problem areas. The action would take place between November 1977 and June, 1983 by the county, its cities, and the special districts. See under "5" below for program cost.

4. The plan also addresses "Special Problem Areas." These are two recommendations for this problem, and each one has three parts. The first recommendation is to establish a program to determine more clearly the sources of suspected problems. Under this recommendation, the first part is to establish improved bacteriological ranges for county shellfish monitoring programs. Narrower ranges for bacterial testing will better reflect shellfish conditions. This action would be undertaken by the County Environmental Health Office between October 1977 and June, 1983. The costs of this are assumed as part of the continuing county program. Financing is with county funds.

The second part of this recommendation is to conduct monitoring above and below suspected problem sources on French Creek. This program would isolate a possible problem source. The County Environmental Health Officer would do this between October 1977 and June 1979. The costs of this are assumed as part of the continuing county program, and financing is with county funds.

The third part of the first recommendation is to develop a coordinated field survey of monitoring in the San Pedro Creek Watershed. This would be an interagency program to isolate possible sewer leaks, illegal discharges, debris, or other problem sources. Implementation would be by the 208 Steering Committee Technical Subcommittee, working between November 1977 and June 1979. See under "5" below for program costs and financing.

The second recommendation to deal with this problem is to establish a program to solve documented problems. The first part of this recommendation centers on lagoon areas and has two aspects: Establish a pilot education program as a test area for a regionwide or county program focused on the lagoon areas; and develop and adopt an area plan which addresses siltation. Implementing agencies are the county lead agency, the county and ABAG. Costs are assumed under previously listed actions. Financing is local, supplemented by ABAG funds and the possibility of a demonstration grant for the pilot education program.

The second portion of this recommendation is to continue implementation of the Foster City Lagoon Management Plan. The plan is being revised and Foster City will implement it. Because it is a continuing and on-going program, costs and financing are already established.

The last part of the second recommendation is to develop and implement other specific program to deal with special problem areas. Implementation is by the county lead agency and the 208 Steering Committee between November 1977 and June 1983. See under "5" immediately below for this item's costs and financing.

5. The fifth problem discussed in this plan is that of "Problem Identification and Control Measure Assessment." The one recommendation is to establish an interagency system to identify problems and related control measure recommendations. This program would coordinate existing State, Federal, regional and local agencies to solve special environmental problems. Implementing agencies would be the county lead agency and the 208 Steering Committee. Schedule for action is from November, 1977 to June 1983. The cost of this action, which includes the cost of several items noted above as well as the cost of the action's several parts (listed below) is \$19,208. Financing is by existing agencies and remaining 208 funds.

There are three subparts to this action. For all of them, costs are assumed in the \$19,208 listed above, and financing is the same as that above. The first part is to establish a 208 Steering Committee Technical Subcommittee to guide development of the system. Affected agencies

should develop priorities and procedures for working together. Implementing agencies are the county lead agency, the 208 Steering Technical Subcommittee to guide development of the system. Affected agencies should develop priorities and procedures for working together. Implementing agencies are the county lead agency, the 208 Steering Committee, and 32 agencies, presumably local, unnamed in the plan. This would take place in November 1977.

The second part of this recommendation is to establish a specific annual work program and general 5 year work program for interagency cooperation. This action proposes a program focused on special runoff-related problems. Affected agencies will determine their priorities for cooperative work. Implementing agencies are as above under the first part of this recommendation. Schedule for implementation is between November 1977 and June 1978.

The third part of this recommendation is to implement a work program with adjustments to reflect annual review and update. Priorities may change annually and a new work program may be needed. Agencies affected are the same as those under the first part of this recommendation. The implementation timetable is between January 1977 and June 1983.

6. The sixth program addressed by the plan is that of continuing planning. The first recommendation is to establish and implement procedures for annual review and update of the plan. Annual adjustments may be necessary to reflect changed priorities or funding. This action would be implemented by the county lead agency and the 208 Steering Committee from March to June each year. This action has a Year One cost (to June, 1979 of \$7,278, with financing from existing agencies and remaining 208 funds.

The second recommendation for this problem is to establish a lead agency in the county. A process and schedule for determining a lead agency would be established, and the lead agency would be determined. A combination of two options is suggested for local review and decision: a 208 Steering Committee and one lead agency. The plan recommends the County Planning Division for this role. Implementing agencies of this action are the county, the cities, and special districts such as the mosquito abatement district and the resource conservation district. Action would take place by June 1978. Costs and financing are as above under the first recommendation.

The third recommendation is to establish financing mechanisms. The first part of this is to establish local cost-sharing mechanisms for annual plan update. This would be a program to share costs in order to diminish the lead agency burden for an areawide program. Action would be implemented by March 1978. Costs and financing are as mentioned under the first recommendation for Problem 6.

The second part of this recommendation is to determine specific cost and financing mechanisms for each annual work program. Each annual work program should identify local, regional, State or Federal funds

to implement the program. Implementing agencies are the county lead agency and the 208 Steering Committee, who would do this between March and June of each year. The cost of the interim plan update, due in June 1978, and the next annual plan update, due in June 1979, are each estimated to be \$8,610. The financing mechanism to determine these costs and financing mechanisms is local.

7. The last problem in this plan is that of documenting local practices. There is one recommendation. It is to establish a program to document local surface runoff related practices and evaluate the effectiveness of measures. Existing experience and programs would serve as the basis for recommendations. Implementing agencies are the county lead agency and the 208 Steering Committee, who would undertake this action between March and June of each year. Costs and financing of this action, including its two subparts described below, are assumed in previous actions.

The first subpart of this recommendation is to develop an annual Action Plan worksheet to direct local documentation efforts. The programs being addressed for the year would be examined in detail. Implementation would be by the county lead agency and the 208 Steering Committee between March and June each year.

The second part of the recommendation is to implement the documentation program. Each agency would complete the annual worksheet described above. The implementing agencies are the county, the cities and the local special districts, and they would do this between September 1977 and June, 1983.

Santa Clara County

The Surface Runoff Management Plan for Santa clara County was published on September 19, 1977 and revised on October 6, 1977. The plan contains three separate objectives, under each of which is an "Action Program." Implementation of the plan is divided into three phases: Phase I - Now through June 30, 1978; Phase II - July 1, 1978 through June 30, 1980; and Phase II - July 1, 1980 through June 30, 1982.

The first objective of the plan is "to determine the nature and magnitude of surface runoff problems in Santa Clara County." To meet this objective, the actions are as follows:

1. Monitor water quality in the Bay and identify specific adverse impacts of surface runoff pollution. This is to be implemented by the Regional Water Quality Control Board during all three phases. Costs would be paid by the State.
2. Monitor the water quality of reservoirs, surface water and groundwater. This would be implemented by the Santa Clara Valley Water District during the plan's three phases. The Phase I expenditure of \$337,000 per year would be paid for out of local funds supplemented by U.S. Geological Survey and California Department of Water Resources funds.

3. Implement a pilot project to determine the role of the Palo Alto Flood Basin in mitigating surface runoff pollution. Implementing agency is the Santa Clara Valley Water District, who would undertake the action during Phase II. Funding is by an EPA grant, which would be sought.
4. Monitor local mitigation programs, and prepare annual reports regarding local efforts and their effectiveness. This would be done by the local surface runoff management coordination agency, not designated in the plan (see under the third objective of this county's plan below). This action would take place during all three phases, with the Phase I cost of \$20,000 being covered by the "208" funds and local funds.
5. Monitor water quality in reservoirs and streams. This action would be implemented by the Santa Clara County Health Department during all three phases. Costs are not yet known, but funding would be from local sources.
6. Implement a street sweeping evaluation project. This Phase I action is to be undertaken by the City of San Jose. Its cost of \$80,000 would be covered by an EPA grant.

The second objective of the Santa Clara County plan is "to develop a set of recommended actions acceptable to local agencies and to the Association of Bay Area Governments which will adequately mitigate identified surface runoff problems, taking into consideration the magnitude of the problems identified, the costs of implementing effective mitigating measures, and other societal problems and needs competing for limited public funds." To meet this objective, the plan proposes a set of actions to mitigate four different types of existing or potential surface runoff problems.

The first type of problem is silt and debris. The plan lists several actions by city. All would be implemented throughout the three phases and all would be paid for out of local funds. The cost figures included are Phase I costs, which are identical to the current annual expenditure for the action.

<u>City</u>	<u>Existing/Proposed Actions</u>	<u>Current Annual Expenditure (Phase I)</u>
<u>Campbell</u>	Street cleaning	\$49,275
	Litter control	22,965
	Catchbasin and storm sewer cleaning	19,960

<u>City</u>	<u>Existing/Proposed Actions</u>	<u>Current Annual Expenditure (Phase I)</u>
<u>Cupertino</u>	Street cleaning	\$31,225
	Litter control	30,000
	Catchbasin cleaning	2,000
	Enforce ordinance restricting dumping of wastes into storm sewers catchbasins	Not known
	Storm sewer cleaning	Not known
	Erosion control	Not known
	Enforce grading ordinance Enforce drainage requirement Enforce landscaping requirement	
<u>Gilroy</u>	Street cleaning	18,493
	Catchbasin cleaning	5,000
<u>Los Altos</u>	Street cleaning	22,000
	Catchbasin cleaning	3,000
	Storm sewer cleaning	Not known
	Erosion control case-by-case requirements for developers	Not known
<u>Los Gatos</u>	Street cleaning	45,000
	Litter control	5,000
	Catchbasin cleaning	1,716
	Storm sewer cleaning	3,000
	Erosion control ordinances	Not known
<u>Milpitas</u>	Street cleaning	33,440
	Litter control	50,000
	Catchbasin cleaning	3,250
	Storm sewer cleaning	1,500

<u>City</u>	<u>Existing/Proposed Actions</u>	Current Annual Expenditure (Phase I)
<u>Monte Sereno</u>	Street cleaning	\$ 500
	Catchbasin cleaning	200
	Storm sewer cleaning	200
<u>Morgan Hill</u>	Street cleaning	13,000
	Litter control	800
	Catchbasin cleaning	Not known
<u>Mountain View</u>	Street Cleaning	82,900
	Catchbasin cleaning	14,040
	Enforce ordinance prohibiting dumping into storm sewers	Not known
	Storm sewer cleaning	14,000
<u>Palo Alto</u>	Street cleaning	147,000
	Catchbasin cleaning	21,500
	Enforce ordinance prohibiting dumping	Not known
	Storm sewer cleaning	Not known
	Erosion control	Not known
<u>San Jose</u>	Grading permits requiring planting Enforce open space ordinance (i.e., 10-acre minimum in foothills)	
	Street cleaning	928,000
	Street sweeping evaluation project	80,000 (EPA grant)
	Cleaning catchbasins	Not known
	Enforce city code prohibiting dumping	Not known
	Enforce grading ordinance	Not known

<u>City</u>	<u>Existing/Proposed Actions</u>	<u>Current Annual Expenditure (Phase I)</u>
<u>Santa Clara</u>	Street cleaning	\$ 91,000
	Litter control	750
	Catchbasin cleaning	38,000
	Storm sewer cleaning	94,000
<u>Saratoga</u>	Street cleaning	10,000
	Catchbasin cleaning	3,500
<u>Sunnyvale</u>	Street cleaning	267,511
	Catchbasin cleaning	20,000
	Storm sewer cleaning	16,000
	Enforce ordinance against dumping into storm sewers	3,000
	Erosion control	
	Grading permits required	5,000

Also in the group of controls listed for the silt and debris problem are several actions to be taken by the county and other agencies in the county. These are listed as "Existing/Proposed Actions." The cost figures given for these activities are Phase I costs, which again are identical to the current annual expenditure for the action.

Santa Clara County is to enforce its grading ordinance. This is to be implemented during all three phases of the plan. The Phase I cost of \$91,800 is to be covered by local funds.

Actions pertaining to the Santa Clara Valley Water District are that it is to undertake stream and channel maintenance and erosion control (cost is \$86,000), silt and debris control (cost is \$106,000), and stream bank erosion protection (cost is \$343,000). These actions apply to all three phases and are locally funded.

The Resource Conservation Districts of the county will continue their installation of best management practices. This is a Phase I action having a cost of \$560,000. Funding sources include the U.S. Department of Agriculture, the Soil Conservation Service, the Agricultural Stabilization and Conservation Service, local agencies, and private

money. Also in Phase I, the RCDs will do land management plan management plan development by watersheds. This is a \$120,000 item, funded by the U.S. Department of Agriculture, the Soil Conservation Service, and local agencies.

The local surface runoff management coordinating agency, which has yet to be designated in Santa Clara County, is to develop model guidelines for incorporating surface runoff concerns into the Environmental Impact Report process. This is to take place during Phase II, costs are not known, and funding would be local.

The San Francisco Bay Regional Water Quality Control Board, not a local agency, would continue its monitoring program and further problem evaluation in Santa Clara County. This action would be undertaken during all three phases, and State funds would cover whatever costs might be incurred.

The California Department of Transportation (Caltrans) would continue its litter control program along freeways and other State-maintained roads during the three phases. The Phase I cost of \$287,000 would be borne by the State.

The second type of problem to be dealt with under this objective is that of automobile oil and grease. The action program here is to establish an oil recycling program by these jurisdictions: Santa Clara County, Cupertino, Los Altos, Santa Clara, San Jose, Saratoga, and Sunnyvale. This action would apply to all three phases. The Phase I costs to all jurisdictions, except the City of Santa Clara, are only those of providing facilities for operators; the City of Santa Clara's current annual expenditure for this program is \$1,000.

Other actions to solve this problem are that the Association of Bay Area Governments will undertake a public education program, the American Association of University Women will implement a public education program regarding oil recycling, and private industry will implement an oil recycling program. These actions pertain to all three phases. Costs are unknown.

The third type of problem is biocides, such as pesticides, herbicides, and insecticides. There are four control measure actions in Santa Clara County's plan to deal with this problem. All these actions are scheduled for all three phases, and each one is locally funded.

The first action is that the Santa Clara County Agricultural Commissioner will regulate use of certain pesticides; Phase I costs are not known. In Morgan Hill, a biological control program will be undertaken, costs of which are unknown. Palo Alto will institute a biological control program for city street trees, an action with a Phase I cost of \$7,000. Finally, San Jose will also implement a biological control program at unknown cost.

The fourth problem under this objective is mercury. The action to be taken for this purpose is that the Santa Clara Valley Water District will prohibit fishing in reservoirs and streams where high mercury concentrations are found. This activity is to be undertaken during all three phases, and local funds would cover whatever costs are incurred.

The third objective of the Santa Clara County plan is "to initiate a process for designation of an appropriate local agency as the surface runoff management coordinating agency for Santa Clara County. The action to be taken to satisfy this objective is that a county agency or committee will be designated as the official body for coordinating local surface runoff efforts. The cities and the county will decide the appropriate structure in timely fashion so that the first annual report updating the plan, due on June 30, 1978 by law, can be prepared. If the coordinating agency has not been established in time to do this, the County Planning Department will prepare the report in cooperation with the Santa Clara Valley Water District and the local Environmental Management Plan Technical Advisory Committee.

Solano County

The Solano County Surface Runoff Management Plan was published in the final draft stage in October 1977. The plan identifies eight problems in the county, eight policies to deal with these problems, and a total of 27 actions to be implemented within the plan's time frame of six years, extending from July 1978 to July 1984. The following summary is organized by problem and policy.

1. The first problem listed in the Solano County plan is administration of the plan and the continuity of planning. The policy is to implement general administration and a continuing planning program. There are several actions under this policy.

The first action is to staff a surface runoff section in the County Public Works and Planning Departments. This would be implemented by the County Planning Department and the County Public Works Department by July 1978. This action has an initial cost of \$880, and it would be paid for out of department funding.

The second action is to continue the Surface Runoff Management Technical Advisory Committee (TAC). The county's surface runoff section, established in the first action above, would do this. Yearly cost of this action is estimated to be \$7,040, paid out of department funding.

The next action is to retain the Surface Runoff Management Citizens Advisory Committee. This would be done by the surface runoff section. Department funding would pay the annual cost of \$880.

The fourth action under this policy is to implement a continuing water quality monitoring program. The surface runoff section would implement this during 1978 at a total cost of \$15,520. Financing mechanisms include EPA grants and county funds.

Also included is an action to initiate a continuing public education program. The surface runoff section would do this by 1978. This would cost \$2,760 per year, except Fiscal Year 1979-80, when it would cost \$1,380. Financing would be by the county.

The sixth action is to review the findings of other surface runoff management agencies and EPA. The surface runoff section would do this starting in July 1978. Costs are \$1,760 per year during the first two fiscal years. County funding would pay for this activity.

Finally under this policy, the last action is to prepare periodic reports. The surface runoff section does this annually, starting in 1978, at a yearly cost of \$1,760. This action is also funded by the county.

2. The second problem identified by the plan is the presence of pollutants of street surfaces, including solids, nutrients, organics, oil and grease, and heavy metals. To solve this problem, the policy is to improve street sweeping practices. The first action under this policy is to conduct a street sweeping demonstration project starting in July 1979. This would be done by the City of Fairfield and the county's surface runoff section. The cost of this item is \$20,000, paid for by EPA, the county, and the City of Fairfield.

The second action under this policy is to prohibit flushing of materials from impervious surfaces. This is done on a continuing basis by the county's cities starting in 1980. The annual cost of \$2,760. The plan does not list funding mechanisms for this action.

There is a third item to establish guidelines for improving street sweeping effectiveness. The surface runoff section and the cities do this during 1979. The total cost of the action is \$880, paid for by the county.

3. The third problem is one of harmful chemicals present in surface runoff. The policy is to control these chemicals. Pursuant to this policy, the first action is to identify critical habitats and potential impacts of chemicals. The Agricultural Commissioner and the surface runoff section do this by 1980 at a total cost of \$1,760. Financing is by the county.

The second action is for the surface runoff section and the Agricultural Commissioner to initiate a public education program aimed at home users of chemicals. This is done during 1979 at a cost of \$880, financed by the county.

4. The plan identifies the dumping of crankcase oil and other harmful substances into storm sewers as a problem. The policy is to control direct discharges. The first action is that the surface runoff section will investigate an oil recycling program during 1978. The cost of \$1,760 will be borne by the county.

The second action is to initiate a public education program on the consequences of direct dumping. This is done by the surface runoff section during 1979 at a cost of \$2,760. Financing is by the county.

5. The fifth problem is the potential for surfacing of organic wastes and entry into surface runoff, for which the policy is to improve septic tank controls. The first action is for the County Health Department to review and modify septic tank criteria. This would take place before July 1979 at a total cost of \$528. The county would pay for the item.

The second action is to monitor the septic tank inspection program. The County Health Department and the surface runoff section do this on a continuing basis starting in July 1978. Yearly cost of the item, paid by the county, is \$1,056.

6. The sixth problem discussed by the plan is the accumulation and decomposition of matter in catchbasins and subsequent "first flush" pollutant loading. The policy is to control catchbasins. Under this policy are three actions, the first of which is for the county and cities to minimize the installation of new catchbasins. This item is listed as without cost.

The second action is to monitor and maintain existing catchbasins. The county, cities and special districts do this on a continuing basis starting in 1978. Annual cost of \$4,880 is paid for by the county, cities, and local special districts.

The last action under this policy is to implement catchbasin elimination programs. The county and cities undertake this beginning in 1978. Annual cost of \$2,640 is covered by the county and cities.

7. Problem 7 is that there is excessive erosion and resulting turbidity and siltation due to agricultural and construction activities. The policy to control erosion is implemented by four actions. The first such action is for the Technical Advisory Committee, the Soil Conservation Service, and the surface runoff section to identify critical areas and applicable controls. This is done during 1978 at a total cost of \$4,400, to be paid by the county and the Soil Conservation Service.

The second action is to implement an erosion control program. The Soil Conservation Service and the County Public Works Department do this starting in 1978 and continuing throughout the planning period of six years. The costs are \$440 for each of the first two years and \$220 per year thereafter. Financing is by the county and the Soil Conservation Service.

Also under this policy is the establishment of erosion control ordinances by the county and cities. This is done by 1979 at a total cost of \$3,300, with funding by the county and the Soil Conservation Service.

The last action to implement this policy is for the county and cities to require erosion control consideration in Environmental Impact Assessments. This action is begun in 1978 and is without cost.

8. The last problem listed in the plan is that of organic loadings and siltation resulting from erosion. The policy of controlling land use has four actions. The first is for the County Planning Department and the Soil Conservation Service to adopt creekside ordinances. The total cost of this action, which would be implemented by July 1979, is \$2,860. It would be paid for by the county and the Soil Conservation Service.

There is also an action to examine agricultural practices by the County Planning Department and the Soil Conservation Service. This would be done by July 1979 at a cost of \$2,200. Financing is by the county and the Soil Conservation Service.

A third action under this policy is to apply subdivision design review. The Technical Advisory Committee and the surface runoff section implement this action on a continuing basis starting in July 1978. There is no cost.

Finally in the Solano County plan, there is an action to coordinate land use activities with Napa County. This is done by the County Planning Department and the surface runoff section during the plan's six years. The annual cost of \$220 is paid by the county.

Sonoma County

The Surface Runoff Management Plan for the Petaluma River and Sonoma Creek Watershed Basins of Sonoma County was published by the Sonoma County Water Agency in October 1977. The plan contains many recommendations to be implemented from 1978 to 1980. These are described below. Following this is a listing of the action to be taken afterwards only if the initial actions before 1980 are not effective in reducing pollutant loads adequately.

The recommendations from 1978 to 1980 are these.

1. Create a Surface Runoff Quality Committee to guide implementation of the surface runoff management plan. Implementing agencies are the Sonoma County Water Agency (lead), the County Health Department, the County Agricultural Commissioner, the County Sanitarian, the County Farm Advisor, the Petaluma Department of Public Works, the Sonoma Department of Public Works, the County Road Department, the Regional Water Quality Control Board, the California Department of Fish and Game, the local resource conservation districts, the County Planning Department, ABAG and news media. The action would be undertaken commencing in summer of 1978, and the committee would meet monthly and as necessary. The lead agency costs of \$60,000 and other committee costs of \$2,700 would be paid for by city, county, State and Federal funding.

2. Review all ordinances pertaining to surface runoff quality and evaluate them for effectiveness. The Surface Runoff Quality Committee would do this starting in the fall of 1978. The costs for this are assumed under Action 1 above. Financing would be city and county.
3. Research the files of jurisdictions, agencies and Surface Runoff Quality Committee members for past problems, and conduct field investigations for existing surface runoff problems. This action would be undertaken by the lead agency staff on an ongoing basis starting in fall, 1978. Costs are assumed under Action 1 above. Financing would be city, county, State and Federal.
4. Establish mobile monitoring stations in the Petaluma and Sonoma Watersheds, and tentatively propose to monitor storms if the data is unavailable from other sources. This action would be implemented by local sanitation districts, private consultants, and the Regional Water Quality Control Board starting in the winter of 1978. The cost of this action is \$2,500 and would be paid for by local, State and Federal funds.
5. Draft an erosion control ordinance which would prevent and/or mitigate erosion problems caused by human disturbance of the ground. Implementing entities include the Surface Runoff Quality Committee, the County Board of Supervisors, and a citizens committee representing construction, agricultural and environmental interests. This action would start during the spring of 1979, and its cost of \$2,500 would be met by local funding.
6. Adopt the erosion control ordinance drafted by the Surface Runoff Quality Committee and the citizens committee. This action would be implemented by the County Board of Supervisors and the County Counsel by winter of 1979. Local funding would pay whatever costs are incurred.
7. Make a concerted effort to encourage all agencies involved in maintenance of water quality to cooperate in and coordinate their activities. The Surface Runoff Quality Committee would start this action in winter 1978. Costs and funding are assumed under Action 1 above.
8. Establish a resource recycling subcommittee of the Surface Runoff Quality Committee composed of public and private members who would investigate the feasibility of recycling sites, litter control ordinances, and household chemical recycling programs. Implementing this action would be the Surface Runoff Quality Committee, the Petaluma Department of Public Works, the Sonoma Department of Public Works, refuse companies, environmental groups, the Sonoma County Department of Public Works, petroleum industry representatives and ABAG. Implementation would commence in fall of 1978. Costs and funding are assumed under Action 1 above.
9. Insure that public agencies involved in the construction and maintenance of public works activities utilize best management practices relative to erosion prevention. This action would be undertaken by

the Surface Runoff Quality Committee, the Sonoma County Department of Public Works, and the Sonoma County Water Agency starting during the summer of 1978. Costs and funding are as listed under Action 1 above.

10. Introduce public educational programs in school curriculum, libraries, public facilities and news media which emphasize good land management values. This action is to be implemented by ABAG, the County School Superintendent, local school districts, library districts, local news media, the cities of Sonoma and Petaluma, and the Sonoma County 208 coordinator. Implementation would begin during the winter of 1978 and be on a continuous basis thereafter. Funding is local, regional, State and Federal.

11. Conduct a media alert of public and private parties of existing runoff problems. The 208 Coordinator, news media, and the Surface Runoff Quality Committee would start this during winter 1978. Costs are assumed under Action 1 above; funding would be city, county, State, Federal and private.

12. Encourage research into long term side effects of the chemicals in the environment. EPA would implement this action starting in the summer of 1979. Costs are not given, and funding would be by ABAG, State and Federal governments.

13. Introduce educational programs informing the public of proper management practices relating to the use of sprays in non-agricultural areas. ABAG, the County Agricultural Commissioner, and the Farm Advisor would implement this starting in summer of 1979. Costs are not given, and funding would be by ABAG and local governments.

14. Issue with each building and grading permit a notice explaining the potential consequences of construction and grading operations where ground disturbance occur. Implementers are the 208 Coordinator, the Sonoma County Building Department, the Sonoma Building Department, and the Petaluma Building Department. This would start in the summer of 1978 and be ongoing thereafter. The cost of \$400 would be covered by local funds.

15. Distribute information and instructions regarding reseeding programs desirable after rangeland, brush and timber fires. This would be done by the 208 Coordinator, the Sonoma County Agricultural Commissioner, the U.S. Department of Agriculture, the Agricultural Stabilization and Conservation Service, resource conservation districts, and fire protection districts. Implementation would begin during the summer of 1978 and continue thereafter. Local, State and Federal funding would cover the costs, of which the local portion would be \$400.

16. Include notices describing proper homeowner maintenance of private septic systems in tax bills and issue such notices with building permits for new systems. Implementing entities are the 208 Coordinator, the Sonoma County Department of Environmental Health and the Sonoma County Building Department. Action would begin summer 1978. Local, State and Federal funding would pay for the action, the local share of which would come to \$400.

17. Prepare an informational manual of the best management practices as they relate to water quality. This would be done by the Surface Runoff Quality Committee, the County Agricultural Commissioner, the Farm Advisor, and resource conservation districts commencing spring 1979. Local funds would pay the cost of \$5,000.

18. Document existing and past surface runoff-related problem (by photography, field notes, inspections, etc.), verify street sweeping schedules and plans with actual sweeping activity, and establish a county street sweeping policy. This action is to be implemented by the Surface Runoff Quality Committee, the Sonoma Public Works Department, the Petaluma Public Works Department, and the Sonoma County Public Works Department beginning summer 1978. County funds would pay for this, of which the lead agency costs would be \$2,000.

19. Concentrate street sweeping programs prior to the rainy season. Agencies implementing this action are the Surface Runoff Quality Committee, the Sonoma Public Works Department, the Petaluma Public Works Department, and the Sonoma County Public Works Department. This action would commence in fall 1978 and continue thereafter. No additional costs would be involved.

20. Impose parking restrictions in certain areas during sweeping times to allow unrestricted access to curb areas. Implementing this action would be the Surface Runoff Quality Committee, the Sonoma Public Works Department, the Petaluma Public Works Department, and the Sonoma County Public Works Department. This action would start in fall 1978. City and county funds would cover the action's cost of \$500.

21. Implement street sweeping programs in high density unincorporated areas where curbs and gutters exist. The Sonoma County Department of Public Works would do this beginning summer 1979. Local funds would pay for the item's \$44,600 cost.

22. Formulate policies in unincorporated areas without curbs and gutters to prevent sediment and debris from entering waterways. Implementing agencies are the Sonoma County Department of Public Works and the Sonoma County Department of Community Development and Environmental Services. This action would commence winter 1979. Local funds would cover the \$5,000 cost.

23. Monitor pollutants and their buildup from use of reclaimed waters, and give this information to farmers utilizing reclaimed waters for agricultural activities. This action would be undertaken by the Regional Water Quality Control Board, the county's sanitation districts, the Sonoma Department of Public Works, and the Petaluma Department of Public Works. Action would begin in the summer of 1979 and be ongoing thereafter. Local funds would pay for the \$2,000 cost.

24. Encourage statewide control of herbicides and pesticides sprays used in non-agricultural activities. Implementing agencies are EPA and the State. The action would start in fall of 1979 and be paid for out of State funds.

25. Draft and adopt ordinances controlling litter. Agencies implementing this action are ABAG, the Surface Runoff Quality Committee, the Sonoma Public Works Department, the Petaluma Public Works Department, the Sonoma County Department of Public Works and the Sonoma County Department of Environmental Health. Action would begin during summer 1978, and local funds would cover the item's \$2,500 cost.

26. Draft and adopt a drainage ordinance which will relate to general plan open space, resource and public safety policies. Undertaking this action will be the Surface Runoff Quality Committee, the Sonoma County Planning Department, the State Department of Fish and Game, and the Regional Water Quality Control Board. Implementation would take place in summer 1978, with local funds to pay for the \$2,500 cost.

The plan also contains a number of actions which would be implemented if those listed above were demonstrated insufficient to meet the need. These actions are listed below. Details would be developed annually with continuing planning work programs.

1. Increase the number of curb miles swept, include new areas, and sweep existing areas with more intensity. Implementation is by the Sonoma County Public Works Department, the Sonoma Public Works Department, and the Petaluma Public Works Department.

2. Utilize vacuum sweepers. Implementation is by the Sonoma Public Works Department, the Petaluma Public Works Department, and the Sonoma County Public Works Department.

3. Consider increasing the scope of street sweeping. Implementation is by the Sonoma Public Works Department and the Petaluma Public Works Department.

4. Begin repairing streets to facilitate street sweeping. Implementation is by the Sonoma Public Works Department and the Petaluma Public Works Department.

5. Step up street repair actions. Implementation is by the Sonoma Public Works Department and the Petaluma Public Works Department.

6. Increase surveillance of chemical spray use. Implementation is by water quality inspectors, the Farm Advisor, The Regional Water Quality Control Board, the County Health Department and the Surface Runoff Quality Committee.

7. Establish neighborhood composts for home landscaping wastes. Implementation is by the Surface Runoff Quality Committee, the Sonoma Public Works Department, the Petaluma Public Works Department, the Sonoma County Department of Public Works, the Sonoma County Department of Environmental Health, and representatives of petroleum companies.

8. Establish neighborhood recycling sites for disposal of household chemicals and petroleum products. Implementation is by the Surface Run-off Quality Committee, the Sonoma Public Works Department, the Petaluma Public Works Department, the Sonoma County Department of Public Works, the Sonoma County Department of Environmental Health, and representatives of petroleum companies.

9. Establish a network of neighborhood recycling sites if monitoring of Action 8 above demonstrates the need. Implementation is by the Surface Runoff Quality Committee, the Sonoma Public Works Department, the Petaluma Public Works Department, the Sonoma County Department of Public Works, the Sonoma County Department of Environmental Health, and representatives of petroleum companies.

10. Clean storm sewers and drainage channels, especially prior to advent of the rainy season. Implementation is by the Sonoma County Water Agency, the Sonoma County Department of Public Works, the Sonoma Public Works Department, and the Petaluma Public Works Department.

11. Clean open flood control chemicals. Implementation is by the Sonoma County Water Agency, the Sonoma County Department of Public Works, the Sonoma Public Works Department, and the Petaluma Public Works Department.

12. Notify landowners of overgrazed conditions and request that they seek advice from their resource conservation district. Implementation is by the Regional Water Quality Control Board, water quality inspectors, the Farm Advisor, the County Agricultural Commissioner, and the Surface Runoff Quality Committee.

13. If range management shows no substantial improvement in quality of runoff waters, instruct farmers to correct range management problems. Implementation is by the County Board of Supervisors, the Surface Run-off Quality Committee, the Farm Advisor, the County Agricultural Commissioner, the Farm Bureau, and the Agricultural Stabilization and Conservation Service office.

14. Enforce best management practice concepts and range management plans. Implementation is by the Regional Water Quality Control Board.

15. Stabilize erosion prone areas to reduce or eliminate erosion. Implementation is by the Sonoma County Water Agency.

16. Include drainage review with respect to water quality during the development review process. Implementation is by the Sonoma County Water Agency, the Project Review Advisory Committee, the Regional Water Quality Control Board, and the Sonoma County Department of Environmental Health.

17. Treat and store storm runoff. Implementation is by the Sonoma Public Works Department, the Petaluma Public Works Department, and the Sonoma County Department of Public Works.

ACTIONS APPLICABLE TO CITIES AND COUNTIES GENERALLY

A large group of the policies and actions in the Draft Environmental Management Plan are to be implemented by local governments generally, including the region's cities, counties and subcounty or subregional special districts. These are grouped below by management plan. Local government representatives should review the entire list.

Water Quality Management Plan

1. The third policy in this plan is to "re-establish recreational and commercial shellfish harvesting in the Bay." Under this policy, Action 3.2 calls for the establishment of a systematic program for monitoring and sampling selected shellfish beds for bacterial contamination over at least a 12-month period. The action would be implemented by June 1978, by the State Department of Health and perhaps the county health departments, it would cost about \$200,000, and it would be financed from Federal grants and State funds from shellfish harvesting license fees.

2. The fourth policy in this plan is to "ensure that water pollution facilities or measures effectively protect water quality." Under this policy, Action 4.2 calls for the monitoring of the performance of municipal and industrial wastewater systems in accordance with monitoring requirements. The action would be implemented by local sewerage agencies and individual private companies on a continuous basis. Although the cost of this measure has not been determined, this cost is not directly attributable to this plan. Financing would be by local and private funds, and the Regional Water Quality Control Board has the authority to ensure implementation of this action through the setting of requirements.

3. The ninth policy of this plan is to "provide facilities needed for industrial wastewater treatment and disposal and water quality protection." Under this policy, Action 9.4 calls for the issuance and updating of permits for industrial discharges to municipal sewer systems. The action would be implemented by local sewerage agencies, with undetermined costs paid for by user charges.

4. The eleventh policy of this plan is to "improve wastewater disposal practices in unsewered areas consistent with regionwide development policies." Under this policy, Action 11.1 calls for the establishment of minimum regionwide standards for on-site disposal systems. These standards would be for the selection, design, evaluation and construction of on-site disposal systems. They would preclude substandard "interim" on-site systems awaiting a "future" sewer. The action also calls for the incorporation of these new standards in local building codes and ordinances. The standards would be developed by the Regional Water Quality Control Board with assistance from the County Health Department and ABAG. Their incorporation into local codes would be by city and county governments. The standards would be developed by December 1979, and revised

annually; city and county governments would consider them by April 1980. The development of the standards is projected to cost \$10,000, which would be paid for by Federal grants, State funds and local funds.

Under the eleventh policy, Action 11.2 calls for the establishment of public management of new on-site disposal systems where such systems are technically appropriate and meet all other Environmental Management Plan requirements. Public management would include monitoring, service, and repair functions. It would be implemented by the appropriate local management agencies by October 1978. The overall cost of public management in the region is not determined, but it is estimated to be \$65 per home receiving this service. Program costs would be paid for by Federal and State grants, property taxes and service fees. The Regional Water Quality Control Board has the legal authority to require public management of on-site disposal systems in new developments.

Also under the eleventh policy, Action 11.3 calls for permitting public management of existing on-site systems. This would be optional and only in areas where on-site systems are technically appropriate; in certain areas, factors other than improper maintenance can cause failure. The action would be implemented by local governments and is authorized under recently enacted Section 6150 et seq. of the California Health and Safety Code. Costs of this action are undetermined; they would be paid for by Federal and State grants, property taxes and service fees. The Regional Water Quality Control Board can ensure implementation of this action by issuance of waste discharge permits for on-site systems.

Finally under the eleventh policy, Action 11.4 calls for the installation of sewerage systems where on-site systems are inappropriate. County Health Departments conduct surveys to identify such problems, and this can lead to the issuance of a cease-and-desist order by the Regional Water Quality Control Board and the need for sewers. Also, new developments not meeting updated standards for on-site systems would automatically need sewers. This action would be implemented by local sewerage agencies on an ongoing basis. The costs are undetermined, but sewerage systems would be financed by Federal and State grants, local bonds, assessments, service charges, property taxes, etc. Implementation of this action would be ensured through the Regional Board's cease-and-desist orders; in addition, the County Health Department can force evacuation of dwellings.

5. The twelfth policy of this plan is to "monitor effectiveness of existing arrangements for preventing and dealing with oil and chemical spills in the Bay Area." Under this policy, Action 12.3 calls for the development of local roadway spill containment and cleanup capabilities. Local fire departments would prepare plans for dealing with a variety of spilled chemicals; the County Offices of Emergency Services would be involved. The action would be implemented by December 1978, the costs are undetermined, and it would be paid for out of local funds.

Water Supply Management Plan

1. The first policy in this plan is to "provide a safe and reliable water supply to all citizens at a minimum monetary and environmental cost." Under this policy, Action 1.4 calls for the construction of needed water supply projects, including interties. It would be implemented by local water agencies, and the annualized cost would be \$15,000,000, none of which is directly attributable to this plan. These costs would be paid for by Federal and State grants in addition to user charges for the water supplied.

Also under this policy, Action 1.5 calls for the preparation of a drought contingency plan. It would be implemented by the Water Management Coordinating Committee, established pursuant to this plan, and by local water agencies. Its total cost of \$32,000 per year would be financed by user charges.

2. The second policy in this plan is to "encourage water saving." Action 2.1 under this policy calls for the implementation of "moderate" residential water savings programs. These emphasize encouraging retrofit of water savings devices in existing homes and mandating the building in of water savings devices in new construction. The action would be implemented by local water supply agencies and homeowners by December 1978. Its total cost is \$1,420,000, of which \$1,270,000 can be attributed to this plan. Financing is by user charges and private funds.

Also under this policy, Action 2.2 calls for the revision and updating of building codes to include water conservation devices in new construction. This action would be implemented by cities and counties by December 1978 for continuous use thereafter. Costs of the action are undetermined. Local funds would pay for it. Additional State legislation may be necessary to ensure its implementation.

Action 2.6 under the second policy calls for the revision of water-rate structures to encourage water conservation. It would be implemented by local water supply agencies by December 1978. Its undetermined cost would be financed by user charges.

Finally under the second policy, Action 2.8 calls for the implementation of an agricultural water conservation program. If enacted, it would require farmers to adopt more efficient irrigation measures. Implementation would require State legislation and the action would be feasible only on a Statewide basis. It would be implemented by farmers and local irrigation districts at a cost of \$3,780,000. Financing would be by private funds.

3. The third policy in this plan is to "encourage reuse of wastewater where cost-effective." Action 3.3 calls for the construction of cost-effective wastewater reclamation projects. It would be implemented by local wastewater agencies on an ongoing basis. Its cost, none of which is directly attributable to this plan, is \$10,200,000. Financing would be by Federal and State grants, user charges, and revenues from the sale of water.

Solid Waste Management Plan

1. The first policy in this plan is that "the regional Solid Waste Management Plan should primarily be based on the county Solid Waste Management Plans; primary responsibility for adequate solid waste management shall rest with local governments." Under this policy, Action 1.1 calls for the county plans to be carried out as part of the regional Solid Waste Management Plan. It would be implemented by counties, with participation from cities and other local jurisdictions, on an ongoing basis. None of the costs of implementation can be directly attributed to the regional plan. Financing is by State and local funds. The State Solid Waste Management Board (SSWMB) may take legal action if the county plans are not implemented, or it shall not approve any request for State or Federal financing assistance for any solid waste management project not in conformance with the approved county plans.

Also under this policy, Action 1.2 calls for the county plans to be updated in compliance with State law and consistent with the updated regional plan. Counties would implement this action with local general funds. None of the costs can be directly attributed to the regional plan. SSWMB can ensure county plan update.

2. The third policy in this plan is that "regional or subregional resource conservation and recovery programs should be consistent with the regional Solid Waste Management Plan and the Environmental Management Plan, and should focus on multi-jurisdictional projects for waste reduction and recovery of materials and energy from solid waste." Under this policy, Action 3.2 is to develop additional information that would lead to construction of a network of new resource recovery facilities. This would be implemented by EPA and SSWMB, in conjunction with cities, counties and ABAG. Its cost of \$996,000 per year would be paid for by Federal and State funds.

3. The fourth policy in this plan is that "all solid waste disposal sites must be situated, designed and operated to provide protection to the surface and ground water quality and the natural environment as well as protection of public health and safety." Action 4.2 under this policy calls for the issuance and enforcement of permits for the operation of solid waste facilities and disposal sites that are consistent with county and regional solid waste management planning. The action would be implemented by the SSWMB, as well as city and county enforcement agencies, and State and local health departments. Implementing costs, none of which are directly attributable to the regional plan, would be paid for by State and local general funds. The SSWMB has the legal mandate to issue permits and may take legal action to ensure enforcement.

4. The fifth policy in this plan is that "where possible, incorporate methods into the existing permit process for solid waste management facilities that will make the process more efficient and convenient and that will facilitate early discussion of project-related issues." Under this policy, Action 5.1 is to compile, update and make available

a permit register and an applicant packet. This is to be implemented by ABAG and the county solid waste management agencies. ABAG will make available to the counties descriptions of permits required for solid waste management facilities and a packet that includes permit application forms. ABAG will compile information on each regulatory and commenting agency and distribute it to the county solid waste management agencies. ABAG will also collect permit application forms from all regulatory agencies, develop a general cover sheet, and distribute the packets to county solid waste management agencies. The county agencies will design an application packet for an applicant to include all required permit forms, and ABAG will monitor changes and advise management agencies. This will be an ongoing task, costing \$1,100 per year. It will be paid for out of ABAG dues.

Action 5.2 under this policy is to assign a staff member in each county knowledgeable in solid waste management to assist applicants in identifying the permit requirements. It would be implemented by the county solid waste management agencies on an ongoing basis beginning in January 1978. Implementation costs are expected to be \$600 per year, to be covered by county general funds, fees and surcharges.

Also under this policy, Action 5.3 is to hold meetings prior to the public hearings. These meetings would be for regulatory agency staff and other appropriate participants to discuss project-related problems and to exchange information. Meetings would be initiated by the coordination agency, other responsible agencies, or by the applicant. Implementing agencies would include the county solid waste management agencies, ABAG, or other agencies as appropriate. The action would be undertaken continuously after January 1978, at an annual cost of \$3,400. It would be paid for by ABAG dues, county general funds, fees, surcharges, and regulatory agencies' operating funds.

5. Policy 6 is that "agencies' existing regulations, including time limits for review and comments, should be clarified and additional ones should be adopted where necessary to formalize procedures used in processing of or commenting on applications." Under this policy, Action 6.1 is to clarify existing agency regulations that establish procedures for processing permit applications and adopt additional regulations where necessary. Existing procedures should be made understandable to other agencies and to applicants for permits. This action would be implemented by all permitting agencies, including local agencies, by October 1978. Implementation is expected to cost a total of \$1,500 per year, which would be covered by county general funds, fees, surcharges, and regulatory agency operating funds.

Policy 6 also includes Action 6.2, which is that responsible agencies will set and adhere to time limits, and commenting agencies will adhere to time limits set by regulatory agencies. This action would be implemented by all permitting agencies, including local agencies, by 1978. It is no direct cost.

6. The eight policy in this plan is that "public education programs are essential to promote awareness of need for waste reduction." Action 8.3 under this policy seeks to introduce school classes on waste reduction with assistance provided by SSWMB, ABAG, and local governments. It would be implemented by local school districts at a cost of \$200,000 per year. Financing would be with State and local funds.

7. The eleventh policy in this plan is that "Federal and State governments should adopt legislative and administrative changes to improve competitive positions of secondary materials and products containing secondary materials." Action 11.2 is to adopt preferential purchasing policies for secondary materials where appropriate. It would be implemented by ABAG, regional agencies and local governments as soon as possible. The cost of this action is \$16,000 per year.

8. Policy 12 in this plan is that "all levels of government should encourage development of source separation programs." Action 12.3 seeks to establish office paper recycling programs. The data and experience of public agency programs would be used to expand recycling into the private sector. This action would be implemented by ABAG, other regional agencies, and local governments at a total cost of \$45,000. It would be paid for by sales of used paper. ABAG will assist in starting such a program.

Also under this policy, Action 12.4 seeks to adopt resolutions supporting existing community source separation and recycling programs. These resolutions would acknowledge ongoing efforts such as voluntary recycling centers, school use of industrial scrap materials (Bay Area Creative Recycle), and would encourage involvement in these programs and establish policies supporting new programs. Resolutions would be adopted as soon as possible by city councils, boards of supervisors, school district boards, and county solid waste management authorities. It is expected to cost \$10,000.

9. Policy 13 in the solid waste plan is that "adequate planning for hazardous waste management requires accurate data." Action 13.1 under this policy seeks to conduct surveys of the amount of hazardous industrial waste currently being disposed of. It would be implemented by the region's counties, with assistance from the State Department of Health and ABAG, by April 1978. The public cost of the action is \$75,000, and the private cost is \$16,000. These costs would be paid for out of Federal and State grants with local matching funds, including in-kind services.

Also under this policy, Action 13.2 seeks to conduct surveys of the amount of infectious or pathological waste currently being generated at hospitals, what these materials are, and how they are currently being disposed of. It would be implemented by the region's counties, with assistance from the State Department of Health and ABAG, by April 1980. The public cost of this action would be \$4,900, and the private cost would be \$900. Financing would be by Federal and State grants with local matching funds, including in-kind services.

Action 13.3 under the same policy seeks to determine whether or not additional Class I sites are needed in the Bay Area, and the waste quantities that can be handled at each existing Class I site. It would be implemented by the State Department of Health, in conjunction with RWQCB, ABAG and the counties, on an ongoing basis. This action would cost \$21,000 and would be paid for by a SSWMB grant.

10. Policy 15 in this plan is that "regulations should ensure safe and proper handling of hazardous wastes." Action 15.4 under this policy seeks to improve procedures for handling spills of hazardous wastes. With respect to this action, the plan would provide for training of firemen in proper procedures for handling spills and incorporate these procedures into the County Emergency Services Plans. This would be implemented by the County Offices of Emergency Services. Its cost of \$14,000 would be paid for by State funds. Action 18.4 also would seek to designate a single responsible agency for each county for the notifications and handling of spills; examples are the County Office of Emergency Services and the County Health Departments. This would be implemented by the county and cities for each county on an ongoing basis. Local funds would cover whatever costs are incurred.

Also under Policy 15, Action 15.6 would establish a permit and monitoring system for on-site disposal of hazardous waste. It would be implemented by the State Health Department, the Bay Area Air Pollution Control District, the Regional Water Quality Control Board, and local agencies. Implementation would cost \$336,000 over a 20-year period, and would be paid for by Federal and State funds in addition to disposal fees.

11. The sixteenth policy in this plan is that "future Class I sites and facilities should be located so that they do not have adverse effects on human health and safety, air and water quality, wildlife, critical environmental resources and urbanized areas." Action 16.1 under this policy, if additional disposal capacity for hazardous wastes is needed, seeks to develop necessary arrangements that would lead to reservation and acquisition of site(s). Affected counties would be convened to determine areas for further study and to develop necessary intergovernmental and public/private arrangements for financing studies, reports, public review and site(s) reservation and/or acquisition. This would be done by the affected local jurisdictions (to be determined) using their zoning or other appropriate means. Costs and financing will be determined if additional capacity is needed.

12. Policy 18 in this plan is that "facilities for wastewater solids management should be constructed in conformance with the regional wastewater solids plan and the Environmental Management Plan (208 plan)." Under this policy, Action 18.1 is to develop Step 1 facilities plans for wastewater solids management based on the regional wastewater solids plan. This study will develop facilities plans for the East Bay Municipal Utility District, Central Contra Costa Sanitation District, City and County of San Francisco and the

Cities of San Jose/Santa Clara. Other wastewater agencies will develop their own facilities plans as necessary. The initial facilities plans are scheduled for December 1978. These plans are being paid for by Federal and State grants as well as local funds. EPA and the State Water Resources Control Board (SWRCB) will ensure implementation.

Also under this policy, Action 18.3 is to design wastewater solids management facilities (Step 2) according to the approved facilities plan. It would be implemented by local wastewater agencies in 1979-80. None of the costs of this action are directly attributable to this plan. Federal and State grants, in addition to local funds, will cover this item's cost of \$14,800,000. EPA and SWRCB will ensure that it is implemented.

Action 18.4 seeks to construct wastewater solids management facilities (21.3) in accordance with the approved facilities plan. It is implemented by local wastewater agencies in 1981-82. None of this action's total cost of \$289,000,000 is attributable to this plan. These costs will be covered by Federal and State grants as well as local funds. EPA and SWRCB will ensure implementation.

Air Quality Management Plan

1. Transportation controls form a group of recommendations in this plan. The general policy here is to "reduce motor vehicle emissions through transportation actions to reduce vehicle use." Under this policy, Actions 9 and 10 seek to implement a regional parking strategy to discourage private auto use and encourage high-occupancy auto use. The implementing agencies are cities, counties, employers and the Metropolitan Transportation Commission (MTC). Action 9 involves the implementation of a parking tax by 1981; the public cost would be \$15,000, and the private cost, which would be in the form of parking charges, would be \$6,000,000. Action 10 involves the establishment of preferential parking for carpools and vanpools; it would be fully implemented by 1985 at a public cost of \$886,000.

Also in this group of recommendations, Action 11 seeks to provide additional transit service. This action would be implemented fully by 1985 by MTC and local transit districts. The public cost would be \$18,540,000. Federal and State funds would help defray most of this cost.

Action 12 of the transportation controls is to increase bus and carpool lanes and/or ramp metering. It would be implemented by the California Department of Transportation (Caltrans), local transit districts, cities and counties. Full implementation would be by 1985 at a public cost of \$7,438,000. Federal and State funds might be available.

Action 15 is also in this group, and it calls for the development of more extensive bicycle systems to reduce short auto trips. This would be implemented by cities, counties, MTC, and Caltrans. Implementation by 1985 would be at a public cost of \$438,000. Federal funds might be forthcoming for this purpose.

2. Another group of recommendations in this plan relates to land use. The general policy here is to "alter regionwide development patterns to reduce automobile travel by means of local and regional policies on land use and urban services. There are 16 more specific policies and a total of 49 actions in this group of recommendations. Implementation would be by cities, counties, Local Agency Formation Commissions, special districts, ABAG, the Bay Area Air Pollution Control District, MTC, the State Water Resources Control Board, Caltrans, the U.S. Department of Transportation, and the U.S. Environmental Protection Agency. The plan schedules these actions for adoption by 1978 and full implementation by 2000. Costs can be estimated when implementing agencies specify those actions what they will take to carry out the recommendations for compact development. Financing mechanisms will likewise depend on specific actions. Many of the actions are already being carried out.

Policy "A" is to "extend new development only to those locations with existing sewer and water service or sewer and water service committed in capital improvement programs." The following actions would be taken:

Action 1 - Local Agency Formation Commissions (LAFCOs) adopt city and special district spheres of influence throughout the region as soon as possible.

Action 2 - LAFCOs adopt the "urban service area" concept for defining urban service commitments and projecting urban land needs for 5, 10 and 20 year periods.

Action 3 - LAFCOs approve annexations and formation of cities and special districts consistent with Action 2 fundings on urban service commitments and urban land needs.

Action 4 - Counties and cities enact non-urban zoning outside urban service areas.

Action 5 - Counties and cities enact temporary moratoria on urban zoning and subdivisions outside urban service areas pending the enforcement of non-urban zoning in such areas.

Policy "B" is to "restrict development outside urban service areas of critical environmental concern (environmental resources, hazards, or amenities)." The following actions would be taken:

Action 6 - Counties and cities enact agricultural zoning or large-lot rural residential zoning (generally one dwelling unit per 40 acre minimum lot size).

Action 7 - Counties and cities initiate, continue or expand programs under the California Land Conservation Act (Williamson Act), the Open Space Easement Act of 1974 and the Z'Berg-Warren-Keene-Collier Forest Taxation Reform Act of 1976 outside urban service areas.

Action 8 - Counties, and cities establish programs of public land management (including acquisition, purchase/leaseback, purchase/transfer of development rights, etc.) for locations outside urban service areas.

Policy "C" is to "develop unimproved land within urban service areas where urban service exist or are committed in capital improvement programs." The following actions would be taken:

Action 9 - ABAG, counties, cities and LAFCOs establish "early warning" interagency formation exchange programs concerning urban service facility plans at the earliest stages of project planning.

Action 10 - ABAG, counties, cities, and LAFCOs expedite plan or project reviews where early information on facilities has been provided, under Action 9.

Action 11 - Counties and cities initiate rezoning and permit preference procedures in locations with existing but unused service capacities (with emphasis on water, sewer, transportation and school services).

Policy "D" is to "complete, as soon as possible, all needed sewer, water or transportation service improvements within adopted urban service areas." The following actions would be taken:

Action 12 - LAFCOs review all city, county, or special district sewer, water or transportation service capital improvement programs and report on priority needs within each urban service area.

Action 13 - ABAG review sewer, water and transportation needs within all urban service areas to determine regionwide priorities among such service needs.

Action 14 - ABAG favorably review applications for State/Federal financial assistance from agencies lacking service capacity within urban service areas, where other existing or committed services have been found by the LAFCO to be capable of accommodating additional development.

Policy "E" is to "improve highway, street, road and transit systems consistent with local actions to stage land development." The following actions would be taken:

Action 15 - Counties and cities enact planning and zoning regulations to stage land development consistent with the scheduling of urban services (including but not limited to "development sequence zoning", "tiered zoning districts", development timing permits etc.).

Action 16 - Caltrans, MTC, counties, cities, and special districts plan, program fund and construct highway, street, road and transit improvements consistent with local action to stage land development.

Policy "F" is to "increase housing and job opportunities in existing urbanized areas by encouraging public and private rebuilding into compatibly mixed commercial, industrial and residential land uses." The following actions would be taken:

Action 17 - Counties and cities initiate and/or expand housing conservation programs in existing urbanized areas.

Action 18 - Counties and cities initiate and/or expand commercial and industrial development and redevelopment in existing urbanized areas.

Action 19 - Counties, cities and special districts initiate and/or expand incentives to public and private redevelopment in urbanized areas. Emphasis would be on sewer and water facilities, and extensive transit service improvements, but should also include educational and cultural facilities and public safety service improvements where appropriate.

Action 20 - ABAG, counties and cities analyze possible local revenue reforms to provide adequate financial resources to carry out Action 19.

Action 21 - ABAG support State legislation to provide local governments with adequate fiscal resources to carry out Action 19.

Action 22 - ABAG oppose Federal and State legislation that would hamper the ability of local governments to carry out rebuilding programs to increase job and housing opportunities in existing urbanized areas.

Policy "G" is to "encourage 'infill' development of bypassed vacant land with urban service areas." The following actions would be taken:

Action 23 - Counties and cities undertake planning studies to inventory bypassed land, identify development problems and resolve questions of best potential use.

Action 24 - Counties and cities adopt necessary changes in zoning and permit procedures to facilitate development of bypassed parcels affected by special conditions.

Action 25 - Service agencies design sewer, water and transportation systems to improve accessibility and service ability to bypassed vacant land in existing urban communities.

Policy "H" is to "develop at higher densities within service areas where existing or committed urban service capacities, including transit, can support the higher densities." The following actions would be taken:

Action 26 - In urban service areas with adequate sewer, water and transit capacities, counties and cities rezone appropriate locations to permit higher densities.

Action 27 - Counties and cities enact ordinances (such as those for planned unit development or cluster zoning) to foster higher densities on appropriate sites.

Policy "I" is to "limit development of land within urban service areas where soil, slope, or other conditions can support only low-density development." The following actions would be taken:

Action 28 - Counties, cities and special districts deny primary urban services to these locations by excluding them from capital improvement programs and design of service systems, and by enactment of hookup moratoria, etc.

Action 29 - Counties, cities, and special districts establish programs of public land management (including but not limited to public land acquisition, purchase/leaseback, etc.) to maintain appropriate sites in open uses.

Policy "J" is to improve the balance of jobs and housing in jurisdictions throughout the region to reduce the necessity for long distance home-to-job travel." The following actions would be taken:

Action 30 - Cities and counties adopt programs to increase local employment opportunities if a substantial proportion of their residents work elsewhere.

Action 31 - Cities and counties adopt programs to increase local housing opportunities in a price range suitable for their work forces if a substantial proportion of their work forces live elsewhere.

Action 32 - ABAG conduct A-95 and EIR reviews to support local government efforts to improve the balance of jobs and housing in communities throughout the region.

Action 33 - ABAG support State and Federal funding allocations for facilities and programs offering incentives to economic development or housing development in appropriate jurisdictions.

Policy "K" is to "mix residential/commercial and industrial development in communities throughout the Bay Region." The following actions would be taken:

Action 34 - Counties and cities revise zoning ordinances to allow compatible mixtures of land uses with adequate design or performance standards (including planned unit developments, performance standard zoning, etc.).

Action 35 - Counties and cities expand application of conditional use permits where appropriate.

Policy "L" is to "discourage new large-scale land development projects that are exclusively commercial, industrial or residential, unless such projects clearly demonstrate that they improve the overall balance of jobs and housing in that city, county, or subregion." The following actions would be taken:

Action 36 - Counties, cities and LAFCOs deny incorporation or annexation of large-scale development proposals that are exclusively commercial, industrial or residential, unless such incorporation or annexation can be shown to improve the overall balance of jobs and housing in the city, county or subregion.

Action 37 - MTC, the California Department of Transportation and transportation districts deny regional transportation system access or extension to proposed large-scale land development projects that are exclusively commercial, industrial or residential unless such transportation actions can be shown to improve the overall balance of jobs and housing in the city, county or subregion.

Policy "M" is to "fund new wastewater and transportation facilities only after areas serviced have taken actions to carry out actions of this plan." The following actions would be taken:

Action 38 - The State Water Resources Control Board and the Environmental Protection Agency require applicants for wastewater facilities under Section 201 of the Federal Water Pollution Control Act to demonstrate, prior to construction funding, that specific actions (including but not limited to land development regulations, urban service commitments, etc.) have been taken by affected jurisdictions to carry out actions of this plan.

Action 39 - The U.S. Department of Transportation, the California Transportation Commission, the California Department of Transportation and the Metropolitan Transportation Commission require applicants for transportation improvement grants to demonstrate, prior to funding for acquisition and construction that specific actions (including but not limited to land development regulations, urban service commitments, etc.) have been taken by affected jurisdictions to carry out actions of this plan.

Policy "N" is to "review development proposals for air quality effects and consistency with compact development recommendations in the plan (indirect source review)." The following actions would be taken:

Action 40 - ABAG, BAAPCD and MTC adopt memoranda of understanding and procedures for prompt and thorough joint review of significant development proposals. Review would be conducted for proposals (such as shopping centers, industrial parks, office complexes, etc.) where significant air pollution could result from the project's generation of auto traffic.

Action 41 - BAAPCD adopt permit procedures for application to indirect sources.

Action 42 - ABAG encourage and support local government efforts to determine direct and indirect effects on air quality in making local land use decisions. Such support shall include technical assistance and analysis.

Action 43 - ABAG encourage and support local government efforts to reduce adverse effects of development proposals on air quality, including but not limited to assistance in identifying and implementing mitigation measures for adverse impacts of municipal wastewater facilities and transportation improvement programs.

Policy "O" is to "adopt financial programs to support local and regional agency actions and private sector development actions consistent with policies in this chapter to reduce home-to-work distance and auto dependency." The following actions would be taken:

Action 44 - ABAG, counties and cities support State and Federal legislation to provide subventions and other fiscal assistance to cities and counties carrying out development policies to achieve air quality standards.

Action 45 - ABAG, counties and cities support State and Federal legislation providing tax incentives to the private sector for rebuilding and development within existing urbanized areas.

Action 46 - ABAG, counties and cities support State and Federal legislation providing financial support to local and regional agencies for carrying out development management polcies and reviews to achieve air quality standards, especially to mitigate adverse impacts on low and moderate income households.

Policy "P" is to "adopt a coordinated regionwide program for carrying out actions for attainment and maintenance of air quality standards through development and land use management actions by cities, counties, special districts, ABAG, BAAPCD, MTC, LAFCOs and other appropriate local and regional agencies." The following actions would be taken:

Action 47 - ABAG identify, within its months of General Assembly adoption of an initial air quality maintenance plan, which implementing actions are being carried out by local and regional agencies.

Action 48 - ABAG include, in each annual revision of the AQMP, agreements reached among local and regional agencies for carrying out land use and development management actions included in the initial AQMP.

Action 49 - ABAG include, in each annual revision of the AQMP, an identification of actions not being carried out by all appropriate agencies, and which actions are to be carried out by appropriate agencies by the next annual revision of the AQMP.

ACTIONS APPLICABLE TO ABAG

The city and county constituents of ABAG will want to know which of the plan's recommendations are to be implemented by ABAG. These control measures are grouped below by management plan. Also included are control measures implemented by institutional arrangements that will be coordinated by ABAG--for example, the San Francisco Bay Delta Research Program. Further details on any of these items can be found in Volume I.

Water Quality Plan

1. The first policy in this plan is to "improve understanding of Bay system and the fate and effects of pollutants entering it." Under this policy, Action 1.1 is to establish the San Francisco Bay Delta Research Program (SFBDRP). The effectiveness of pollution control actions is impaired by our limited knowledge of the ways in which bay waters and aquatic life are affected by pollutants. The recommended program will provide further information on the pollution cause and effect relationship and translate information into better standards for water quality protection. Monitoring and analysis will be centralized with a consequent saving in cost and an improvement in accuracy. Annual reports in pollution control will keep the public informed about the state of the Bay. This action would be implemented August of 1978 by ABAG in consultation with all affected parties, including dischargers and the San Francisco Bay Regional Water Quality Control Board (RWQCB). The cost of implementation is \$185,000, which would be financed by State and Federal grants along with fees from dischargers.

Also under this policy, Action 1.2 seeks to establish the research goals of SFBDRP. It would be implemented by December of 1978 by SFBDRP and RWQCB. The cost of this action is included in the \$185,000 listed above under Action 1.1.

Action 1.3 under this policy is for SFBDRP to conduct research. The cost of this action is \$1,800,000, covered by State and Federal grants.

Action 1.4 is to establish a regionwide monitoring program. This is to be done by December 1978 by SFBDRP in consultation with RWQCB. The cost of this item is included under the cost for Action 1.1.

Action 1.5 seeks to conduct receiving water monitoring. SFBDRP would implement it at a cost of \$1,700,000. None of this cost is directly attributable to this plan. Financing is by fees from dischargers.

Action 1.6, implemented by SFBDRP, is to publish an annual "state of the waters" report. Publication would be in August, 1979 and annually thereafter at a cost of \$32,000. This cost would be paid for by State and EPA grants in addition to fees from dischargers.

Action 1.7 is to establish a regionwide water quality data management system. This would be implemented by ABAG by December, 1978. Its cost of \$19,000 would be covered by State and EPA grants in conjunction with ABAG membership dues.

2. The second policy in this plan is to "establish continuing planning process for water quality management." Action 2.1 under this policy is to reaffirm the water quality objectives for the region's waters. Water quality objectives designed to protect beneficial uses are the foundation of the water quality management plan. Beneficial use designations and water quality objectives for the region are shown in Volume I of the Environmental Management Plan. These objectives are identical to currently adopted water quality objectives. ABAG's Environmental Management Task Force would implement this action by August, 1978. It is without cost.

Also under the second policy, Action 2.3 is to sign a memorandum of agreement establishing the procedure for continuing water quality planning. This agreement would be between ABAG and RWQCB. It would be signed by March, 1978.

Action 2.4 is to update the Water Quality Management Plan in conformance with other environmental goals. As the population grows and information on pollutant effects and the effectiveness of control measures accumulates, the plan must be updated. This would be done by ABAG and RWQCB every two years after August, 1978. It would cost \$46,000, paid for by State appropriations and EPA grants.

3. The fourth policy in this plan is to "ensure that water pollution facilities or measures effectively protect water quality." Under this policy, Action 4.3 is to publish an annual report summarizing the results of dischargers' self-monitoring programs. Under a separate action, dischargers of water-borne pollutants would monitor the performance of their own wastewater systems. Action 4.3 would be implemented by RWQCB in cooperation with SFBDRP at an annual cost of \$32,000. This cost would be paid for by the State.

Action 4.4 under this policy is to coordinate wastewater treatment plant operator training programs. It would be implemented by ABAG on a continuous basis at a cost of \$29,000. Financing would be by fees and possible Federal grants.

Also under the fourth policy, Action 4.5 is to establish a technical assistance program/information clearinghouse for wastewater system operations. This program would provide treatment plant operators with an organization to call for technical assistance, location of spares, emergency assistance, and so on. It would be implemented by ABAG at a cost of \$40,000. Financing would be by ABAG dues if special districts become eligible for membership.

4. The fifth policy is to "provide facilities needed for municipal sewerage service and water quality protection." Under this policy, Action 5.3 is to update the twenty-year project list consistent with other elements of the Environmental Management Plan. This action would be implemented by ABAG and RWQCB annually. It would cost \$7,000, paid for by State appropriations and EPA grants.

5. Policy 6 of this plan is to "encourage consolidation of treatment facilities and discharge of wastewater to well-mixed areas of the receiving waters." Action 6.1 is to review all proposed facilities for consistency with this policy. Decisions regarding configuration of treatment and disposal facilities have been influenced by the desire to maximize use of existing facilities. As facilities wear out, earlier decisions must be re-examined to ensure that replacement is done in the most cost-effective manner. So long as the capacities, consolidations and timing of facilities are consistent with the Environmental Management Plan, the construction of wastewater facilities should not induce growth. The annual update of the 20-year project list would include projects consistent with the plan and would establish that such projects may be eligible for future Federal and State funding assistance. This action would be implemented on a continuous basis by ABAG. The cost per year would be \$4,000, paid for by State appropriations and EPA grants.

6. The eighth policy in this plan is to "establish a program of surface runoff controls that emphasize low cost measures to reduce the pollutant load from this source." Action 8.15 under this policy is to establish a public education/information program. It seeks to educate the public to the water quality impacts of dumping, littering, use of certain chemicals, construction, etc., and to educate and promote recycling and proper disposal of wastes. It is implemented in part by ABAG. Overall implementation costs region-wide are undetermined but have been estimated to be at least \$15,500 per year. Local and State funds would pay these costs.

7. The tenth policy in this plan is to "reduce sewage pollution from small boats in marinas, harbors and enclosed bays." Action 10.1 is to improve monitoring and documentation of vessel waste pollution by conducting periodic bacterial sampling of waters in all areas of small boat congregation and documenting the effectiveness of the current program. It would be implemented by SFBDRP at an annual cost of \$150,000, paid for by State and EPA grants. Sampling would be done quarterly commencing in December 1978.

Also under the tenth policy, Action 10.3 seeks to inform the boating public of marine sanitation device programs. Information would be provided on the types of devices, matching shoreside facilities, schedules, procedures and costs. ABAG and RWQCB would implement this action in 1978 and 1979 at an annual cost of \$5,000. A State appropriation would pay for it.

8. Policy 11 in this plan is to "improve wastewater disposal practices in unsewered areas consistent with regionwide development policies." Action 11.1 under this policy is to establish minimum regionwide standards for on-site disposal systems. These would be standards for selection, design, evaluation and construction of on-site disposal systems. Standards would preclude sub-standard "interim" on-site systems awaiting a "future" sewer. The action would be implemented by RWQCB, with assistance from County Health Departments and ABAG. Standards would be established by December, 1979 and reviewed annually thereafter. The cost of the action is \$10,000 annually, paid for by State funds, Federal grants, and local funds.

9. The twelfth policy in this plan is to "monitor effectiveness of existing arrangements for preventing and dealing with oil and chemical spills in Bay Area." Action 12.5 of this policy is for ABAG to incorporate reports by BCDC and the U.S. Coast Guard into the Environmental Management Plan. The BCDC report, recommended under a separate action, is about oil spill coordination, prevention efforts, cleanup performance and recommended actions. The Coast Guard report, also recommended in a separate action, would be on the addition of high-resolution radar coverage in the Carquinez Strait and North San Pablo Bay areas. ABAG's action would take place by December, 1979 at a cost of \$7,000. Financing would be by local funds, supplemented by State and Federal grants.

Water Supply Management Plan

1. The first policy in the Water Supply Management Plan is to "provide a safe and reliable water supply to all citizens at a minimum monetary and environmental cost." Under this policy, Action 1.7 is to prepare a regional groundwater basin management plan, contingent on the results of groundwater surveys. The plan would be prepared by a newly-established water management coordinating committee (WMCC), ABAG, and RWQCB. The cost is undetermined, but it would be paid for by local funds, supplemented by State and Federal grants. Implementation would be in 1979-80.

2. Policy 2 in this plan is to "encourage water saving." Action 2.3 is to establish a regionally coordinated public information/education program by WMCC and ABAG by December 1978. The cost of the action would be \$8,600 yearly, paid for by WMCC member dues.

Also under this policy, Action 2.5 is to publish an annual water use and conservation report. This would be done by WMCC and ABAG on an ongoing basis. The annual cost of \$18,000 would be paid for by WMCC member dues.

Action 2.7 is to conduct a study to determine the savings in sewage treatment costs attributable to water conservation. It would be implemented by WMCC and ABAG, at an annual cost of \$4,000, by April of 1978. Financing would possibly be by State and Federal grants.

Solid Waste Management Plan

1. The first policy in this plan is that "the regional Solid Waste Management Plan should primarily be based on the county Solid Waste Management Plans: Primary responsibility for adequate solid waste management shall rest with local governments." Under this policy, Action 1.3 is to review the updated county solid waste management plans. This is to be done by ABAG at a cost of \$10,000 per year. Financing is by Federal and State funds in addition to ABAG dues.

2. The second policy in this plan is that "regional solid waste management planning should be coordinated with State and local planning and be an integral part of areawide environmental management planning." Under this policy, Action 2.1 is to update the regional solid waste management plan, incorporating the results of ongoing planning activities of other State, regional, and local agencies and including more detailed planning for regional issues. This is to be done by ABAG in 1979, and annually thereafter at a cost of \$55,000. Financing is by ABAG dues, Federal funds, and State funds.

3. The third policy in the Solid Waste Management Plan is that "regional or subregional resource conservation and recovery programs should be consistent with the regional Solid Waste Management Plan and the Environmental Management Plan, and should focus on multi-jurisdictional projects for waste reduction and recovery of materials and energy from solid waste." Under this policy, Action 3.1 is to review proposed resource recovery projects including large-scale waste combustion projects to ensure consistency with regional solid waste management and other environmental goals and standards. This action is to be implemented by EPA, the State Solid Waste Management Board (SSWMB), ABAG, and the State Clearinghouse. Its annual cost is \$6,000, paid for by Federal and State funds as well as ABAG dues.

Also under this policy, Action 3.2 is to develop additional information that would lead to the construction of a network of new resource recovery facilities. This action would be implemented by EPA and SSWMB, in conjunction with cities, counties and ABAG. It would be implemented by 1982 at a cost of \$996,000, which would be paid for by Federal and State funds.

4. Policy 5 in this plan is that "where possible, incorporate methods into the existing permit process for solid waste management facilities that will make the process more efficient and convenient and that will facilitate early discussion of project-related issues." Action 5.1 under this policy is to compile, update and make available a permit register and an applicant packet. This is to be implemented by ABAG and the county solid waste management agencies. ABAG will make available to the counties descriptions of permits required for solid waste management facilities and a packet

that includes permit application forms. ABAG will compile information on each regulatory and commenting agency and distribute it to the county solid waste management agencies. ABAG will also collect permit application forms from all regulatory agencies, develop a general cover sheet, and distribute the packets to county solid waste management agencies. The county agencies will design an application packet for an applicant to include all required permit forms, and ABAG will monitor changes and advise management agencies. This will be an on-going task, costing \$1,100 per year. It will be paid for out of ABAG dues.

Also under this policy, Action 5.3 is to hold meetings prior to the public hearings. These meetings would be for regulatory agency staff and other appropriate participants to discuss project-related problems and to exchange information. Meetings would be initiated by the coordination agency, other responsible agencies, or by the applicant. Implementing agencies would include the county solid waste management agencies, ABAG, or other agencies as appropriate. The action would be undertaken continuously after January, 1978 at an annual cost of \$3,400. It would be paid for by ABAG dues, county general funds, fees, surcharges and regulatory agencies' operating funds.

5. Policy 7 is that "permit coordination procedures for solid waste management activities should be integrated with other coordination projects in the future, as appropriate." Under this policy, Action 7.1 is to maintain contact with other agencies working on permit streamlining and inform them of experience gained in implementation of this process. ABAG would implement this action at an annual cost of \$500, paid for out of ABAG dues.

Also under the seventh policy, Action 7.2 is to work with other agencies to explore the possibility of legislative changes that would further streamline the permit approval process, if appropriate. Legislative changes might affect the scope and extent of agencies' regulatory authority. They could occur in the context of the overall permit approval system. This action would be implemented by ABAG at an annual cost of \$1,900, paid for out of ABAG dues.

6. Policy 8 in this plan is that "public education programs are essential to promote awareness of need for waste reduction." Under this policy, Action 8.2 is to provide public information packets on waste reduction. These packets would describe and illustrate ways to reduce use and increase re-use of materials. ABAG and SSWMB would implement this action, it would cost \$500 per year, and financing would come from the State general fund.

7. Policy 10 in this plan is to "facilitate regionwide cooperation in developing stable, adequate markets for secondary materials." Action 10.1 is to prepare and update a listing of buyers of secondary materials which would include estimates, quantities, quality, and specifications on materials handled. This would be implemented by ABAG, its annual cost would be \$500, and it would be paid for out of State and Federal funds.

Also under this policy, Action 10.2 is to provide a forum for coordination. This would involve organizing meetings for representatives of recycling centers, local governments, citizen groups, secondary markets, and private enterprise. It would be implemented by ABAG at an annual cost of \$1,600. Financing would be by State and Federal funds.

8. Policy 11 is that "Federal and State governments should adopt legislative and administrative changes to improve competitive positions of secondary materials and products containing secondary materials." Under this policy, Action 11.2 is to adopt preferential purchasing policies for products containing secondary materials, where appropriate. This would be implemented by ABAG, regional agencies and local governments as soon as possible. The annual cost would be \$16,000.

9. Policy 12 is that "all levels of governments should encourage development of source separation programs." Under this policy, Action 12.2 is to provide information and assistance on source separation. This action would be implemented by ABAG and SSWMB, who would facilitate efforts of local governments, citizen groups, and collection companies by offering technical advice, contacting secondary material buyers, and by providing a forum for coordination of these efforts. It would cost \$7,800 per year and be funded by ABAG dues, State and Federal grants, and State general funds.

Also under this policy, Action 12.3 would seek to establish an office paper recycling program, implemented by ABAG and other regional agencies in addition to local governments. The data and experience of the public agency programs would then be used to expand recycling into the private sector. The action would cost \$3,900 per year and be paid for by sales of used paper.

10. The thirteenth policy is that "adequate planning for hazardous waste management requires accurate data." Under this policy, Action 13.1 is to conduct surveys of the amount of hazardous industrial waste currently being generated, what these materials are and how they are currently being disposed of. It would be implemented by the counties, with assistance from the State Department of Health and ABAG, by April 1978. Its total cost of \$75,000 would be financed by the Federal Resource Conservation and Recovery Act, the State Solid Waste Management Board, the Bay Area Solid Waste Management Project Phase II, and local matching funds (including in-kind services).

Also under this policy, Action 13.2 is to conduct surveys of hazardous hospital wastes, including the amount of infectious or pathological waste currently being generated, what these materials are, and how they are currently being disposed of. It would be implemented by the counties, with assistance from the State Department of Health and ABAG,

by April 1980. The total cost of this action is \$4,900, paid for by the Federal Resource Conservation and Recovery Act, the State Solid Waste Management Board, the Bay Area Solid Waste Management Project Phase II, and local matching funds (including in-kind services).

Action 13.3 seeks to determine whether or not there is a need for additional Class I hazardous waste disposal sites in the Bay Area, and to determine the waste quantities that can be handled at existing Class I sites. This action would be implemented by the State Department of Health, in conjunction with the Regional Water Quality Control Board, ABAG, and the counties. Its total cost of \$21,000 would be paid for out of a State Solid Waste Management Board grant.

11. The fourteenth policy is that "waste reduction, source separation, and recovery of hazardous industrial wastes should be promoted in the interest of limiting land disposal." Under this policy, Action 14.1 is to encourage industry to make changes in its processes to reduce the amount of hazardous waste generated. It would be implemented by ABAG, the State Department of Health, and RWQCB. It has an annual cost of \$13,000 and would be financed by the Federal Resource Conservation and Recovery Act, State funds, and the California Pollution Control Financing Authority.

Action 14.2 is to encourage industry to avoid mixing its wastes so as to facilitate recycling. This would be implemented by the State Department of Health and ABAG at an annual cost of \$13,000. It would be paid for by the Federal Resource Conservation and Recovery Act and State funds.

Action 14.3 is to investigate the possibility of hazardous waste consolidation to facilitate waste processing and recovery. Implemented by the State Health Department and ABAG, it would cost \$3,000 per year and be financed by the Federal Resource Conservation and Recovery Act as well as State funds.

12. The seventeenth policy in this plan is that "a regional plan for long-term wastewater solids management should be prepared and updated." Action 17.2 under this policy is to update the regional plan as part of the regional solid waste management planning effort. ABAG would do this on a continuous basis after December, 1977, and it would be paid for by Federal grants.

13. Policy 18 in this plan is that "facilities for wastewater solids management should be constructed in conformance with the regional Wastewater Solids Plan and the Environmental Management Plan (208 plan)." Under this policy, Action 18.2 is to review proposed facilities plans and approve those that are consistent with the regional Solid Waste Management Plan, and the 20-year project list in the 208 plan. This action would be implemented by EPA, the State Water Resources Control Board, RWQCB, the State Health Department, ABAG, and the State clearinghouse. Implementation would be by 1979 at an annual cost of \$4,000. Funding would be by Federal and State grants, as well as local and State general funds.

Air Quality Management Plan

With the exception of the fourth set, none of the policies and actions in this plan would be implemented directly by ABAG. The fourth set of recommendations is that for development and land use management; it is comprised of 16 policies and 49 actions, some of which would be implemented by ABAG. The full set of policies and actions is set out in a previous section of this chapter entitled "Actions Applicable to Cities and Counties Generally."

**ACTIONS APPLICABLE TO STATE AGENCIES
AND THE CALIFORNIA LEGISLATURE**

A large number of State agencies is designated in the Environmental Management Plan to have implementation responsibility. Additional actions are also directed to the California Legislature. The following can be used as a guide by those state agencies which are implicated by the EMP.

- o California State Legislature - Water Quality Management Plan, Water Supply Management Plan, Solid Waste Management Plan.
- o State Water Resources Control Board (SWRCB) - Water Quality Management Plan, Solid Waste Management Plan, Air Quality Management Plan.
- o State Department of Health - Water Quality Management Plan, Solid Waste Management Plan.
- o State Department of Fish and Game - Water Quality Management Plan.
- o State Solid Waste Management Board (SSWMB) - Water Quality Management Plan, Solid Waste Management Plan.
- o State Department of Navigation and Ocean Development - Water Quality Management Plan.
- o Governor's Office of Appropriate Technology - Water Quality Management Plan.
- o State Clearinghouse - Solid Waste Management Plan.
- o State Lands Commission - Solid Waste Management Plan.
- o State Air Resources Board (CARB) - Air Quality Management Plan.
- o State Bureau of Automotive Repair - Air Quality Management Plan.
- o State Toll Bridge Authority - Air Quality Management Plan.
- o State Department of Transportation (Caltrans) - Air Quality Management Plan.

Agency and legislative representatives need refer only to those plans in the overall EMP that assign responsibilities to their agency.

Water Quality Management Plan

1. The second policy in this plan is to "establish continuing planning process for water quality management." Action 2.2 under this policy is to establish interim standards for delta outflow to the Bay during winter months. To ensure that sufficient wintertime flood flows enter the Bay, it is recommended that an interim standard be established. Research work done by the San Francisco Bay Delta Research Program, proposed in the EMP, would be directed at developing a basis for a final standard. The following standard is suggested:

- o A minimum of 2 million acre-feet of water per year will be reserved for elevated delta outflow.
- o One million acre-feet of this reservation will be released in a five day pulse at the rate of 100,000 cubic feet per second.
- o The second 1 million acre-feet will be released, immediately following the pulse, at a 10,000 cfs rate over a 50-day period.
- o These provisions represent a minimum, not a typical, allotment of water. In average-to-wet years, greater quantities of water should be available to elevate delta outflow.

This action would be implemented by SWRCB by June of 1978. No costs would be thereby incurred.

2. The third policy in the Water Quality Management Plan is to "re-establish recreational and commercial shellfish harvesting in the Bay." Action 3.1 is to conduct a preliminary survey and assessment of shellfish beds in the Bay. Major shellfish beds suitable for recreational harvesting would be identified and assessed. The types and sources of contaminants affecting these beds would also be identified. This action would be implemented by the State Department of Health, the State Department of Fish and Game, and/or a private consultant by February 1978. The cost of \$50,000 would be paid for out of an EPA and/or State grant.

Also under this policy, Action 3.2 seeks to establish a systematic monitoring and sampling program of selected shellfish beds. Based on findings from Action 3.1 (above), a selected number of shellfish beds would be monitored and sampled for bacterial contamination over at least a 12-month period. This action would be undertaken by the State Department of Health and perhaps the county health departments by June, 1978. It would cost \$200,000 and be financed by Federal grants and/or State funds from shellfish harvesting license fees.

Action 3.3 under this policy is to establish an agreement between the State Department of Health and the State Department of Fish and Game for patrolling shellfish beds. If findings from Action 3.2 (above) indicate that recreational shellfish harvesting is safe, the Department of Fish and Game would patrol the beds, keeping people off unapproved and conditionally approved beds while allowing harvesting in approved beds. Implementing agency for this action would be the State Department of Fish and Game at a cost of \$100,000 per year.

Finally under this policy, Action 3.4 calls for the establishment of criteria for commercial shellfishing in the Bay. The State Department of Health would establish the type and extend of pilot studies and routine monitoring required as prerequisites to any approval of commercial shellfishing in the Bay. This action would be undertaken by the State Department of Health by 1978. It is cost-free.

3. Policy 8 in this plan is to "establish a program of surface run-off controls that emphasize low cost measures to reduce the pollutant load from this source." Action 8.2 under this policy is to control the use of certain chemicals. This action seeks to educate the user and the general public on the proper use and disposal of hazardous chemicals, to regulate the use of certain chemicals, and to encourage oil recycling. It is implemented by county solid waste management agencies, county governments and special districts in Marin, Santa Clara, Solano, and Alameda Counties, regional agencies, the State Department of Health, and the State Solid Waste Management Board. The total yearly cost of this action is undetermined but estimated to be at least \$1,100. It would be paid for out of local funds, State funds, and the Federal Resource Conservation and Recovery Act.

4. The tenth policy in this plan is to "reduce sewage pollution from small boats in marinas, harbors and enclosed bays." Action 10.6 under this policy is to revise the State Department of Navigation and Ocean Development's (DNOD's) loans and grants programs to fund pump-out facilities and on-shore toilets. These programs presently fund pump-out facilities only as part of overall new harbor or marina packages. The action would be implemented by DNOD and is cost-free.

5. Policy 11 in this plan is to "improve wastewater disposal practices in unsewered areas consistent with regionwide development policies." Action 11.5 is to promote research of on-site disposal systems. The action seeks to improve on-site systems, develop new design and construction criteria, and develop new systems. It would be implemented by the Governor's Office of Appropriate Technology and private industry on an ongoing basis. Its cost is undetermined. Financing would be by State funds and perhaps Federal subsidies or private funds.

Also under this policy, Action 11.6 is to revise State and Federal grants programs to ensure consideration for funding on-site systems. This would be for the purpose of increasing the number of on-site system and maintenance district components eligible for funding. Implementing agencies are SWRCB and EPA. The action is without cost.

6. Policy 12 in the Water Quality Management Plan is to "monitor effectiveness of existing arrangements for preventing and dealing with oil and chemical spills in Bay Area." Action 12.7 under this policy is to enact State legislation to increase the liability of spillers and compensate for oil spill damage. Bills introduced in the 1977-78 Regular Session of the State Legislature include SB 536 and SB 841. This action is contingent on proposed legislation not being pre-empted by Federal law. It would be implemented by the California Legislature, and its cost is undetermined.

Water Supply Management Plan

1. The second policy in this plan is to "encourage water saving." Action 2.4 calls for the enactment of legislation to provide incentives for retrofitting domestic water conservation devices and agricultural water conservation. It would be implemented by the California Legislature and U.S. Congress by December 1978. Costs are undetermined.

Solid Waste Management Plan

1. Policy 3 in this plan is that "regional or subregional resource conservation and recovery programs should be consistent with the regional Solid Waste Management Plan and the Environmental Management Plan, and should focus on multi-jurisdictional projects for waste reduction and recovery of materials and energy from solid waste." Action 3.1 under this policy is to review proposed resource recovery projects including large-scale waste combustion projects to ensure consistency with regional solid waste management and other environmental goals and standards. This action would be implemented on an ongoing basis by EPA, the State Solid Waste Management Board (SSWMB), and the State Clearinghouse. Its cost of \$6,000 per year, none of which results directly from this plan, would be paid for by Federal and State funds in addition to ABAG dues.

Also under the third policy, Action 3.2 is to develop additional information that would lead to the construction of a network of new resource recovery facilities. This action would be implemented by EPA and SSWMB, in conjunction with cities, counties and ABAG. It would be implemented by 1982 at a cost of \$996,000, which would be paid for by Federal and State funds.

2. The fourth policy in this plan is that "all solid waste disposal sites must be situated, designed and operated to provide protection to the surface and ground water quality and the natural environment as well as protection of public health safety." Action 4.2 under this policy is to issue and enforce permits for the operation of solid waste and hazardous waste facilities and disposal sites that are consistent with county and regional solid waste management planning. Implementation would be by SSWMB, city and county enforcement agencies, the State Department of Health, and local health departments. Its projected cost of \$2,100,000 per year would be financed by State and local general funds.

3. Policy 6 in this plan is that "agencies' existing regulations, including time limits for review and comments, should be clarified and additional ones should be adopted where necessary to formalize procedures used in processing of or commenting on applications." Action 6.1 under this policy is to clarify existing agency regulations that establish procedures for processing permit applications and adopt additional regulations where necessary. Existing procedures should be made understandable to other agencies and to applicants for permits. This action would be implemented by all permitting agencies, including SSWMB, the

State Lands Commission, and the State Department of Health. Implementation is expected to cost a total of \$1,500 per year, which would be covered by county general funds, fees, surcharges and regulatory agency operating funds.

Also under Policy 6 is Action 6.2, which is that responsible agencies will set and adhere to time limits, and commenting agencies will adhere to the time limits set by regulatory agencies. This action would be implemented by all permitting agencies, including SSWMB, the State Lands Commission, and the State Department of Health, by 1978. This action is without cost.

4. Policy 8 in the Solid Waste Management Plan is that "public education programs are essential to promote awareness of need for waste reduction." Action 8.1 is that Federal and State governments should make funds available to support education programs for promoting waste reduction. These programs would be aimed at primary and secondary schools, households, stores and offices, and manufacturing plants. It would be implemented by State government and Federal government at a yearly cost of \$2,500. Financing would be with State and Federal funds.

Also under this policy, Action 8.2 is to provide public information packets on waste reduction. These packets would describe and illustrate ways to reduce use and increase reuse of materials. The action would be implemented by ABAG and SSWMB by 1978. The total cost is \$5,500, paid for out of the State general fund.

5. Policy 9 in this plan is that "Federal and State governments should adopt legislative and administrative changes which promote waste reduction." Action 9.1 is to change manufacturing standards and regulations, where appropriate. These changes might be needed to: (a) Reduce excess packaging; (b) Prohibit manufacture of certain products, such as disposable containers; (c) Limit the number of container sizes; (d) Increase the service life of products, e.g., appliances; and (e) Design criteria (such as for modular components) to make repair more attractive than replacement. This action would be implemented by U.S. Congress, the Federal administration, the State Legislature, and State Legislature, and State administration. This is a cost-free action.

6. Policy 12 is that "all levels of governments should encourage development of source separation programs." Under this policy, Action 12.1 is to provide information and assistance on source separation. This action would be implemented by ABAG and SSWMB, who would facilitate efforts of local governments, citizen groups, and collection companies by offering technical advice, contacting secondary material buyers, and by providing a forum for coordination of these efforts. It would cost \$7,800 per year and be funded by ABAG dues, State and Federal grants, and State general funds.

Also under this policy, Action 12.2 would fund demonstration projects on source separation and recycling projects, including oil recovery, at the local, State and Federal levels. The action would be implemented by the State Legislature and Federal legislature at a total cost of \$3,000,000. The costs would be financed by State and Federal funds.

Also under this policy, Action 12.2 would fund demonstration projects on source separation and recycling projects, including oil recovery, at the local, State and Federal levels. The action would be implemented by the State Legislature and Federal legislature at a total cost of \$3,000,000. The costs would be financed by State and Federal funds.

7. Policy 13 in this plan is that "adequate planning for hazardous waste management requires accurate data." Under this policy, Action 13.1 is to conduct surveys of the amount of hazardous industrial waste currently being generated, what these materials are and how they are currently being disposed of. It would be implemented by the counties, with assistance from the State Department of Health and ABAG, by April, 1978. Its total cost of \$75,000 would be financed by the Federal Resource Conservation and Recovery Act, the State Solid Waste Management Board, the Bay Area Solid Waste Management Project Phase II, and local matching funds (including in-kind services).

Also under this policy, Action 13.2 is to conduct surveys of hazardous hospital wastes, including the amount of infectious or pathological waste currently being generated, what these materials are, and how they are currently being disposed of. It would be implemented by the counties, with assistance from the State Department of Health and ABAG, by April 1980. The total cost of this action is \$4,900, paid for by the Federal Resource Conservation and Recovery Act, the State Solid Waste Management Board, the Bay Area Solid Waste Management Project Phase II, and local matching funds (including in-kind services).

Action 13.3 seeks to determine whether or not there is a need for additional Class I hazardous waste disposal sites in the Bay Area, and to determine the waste quantities that can be handled at existing Class I sites. This action would be implemented by the State Department of Health, in conjunction with the Regional Water Quality Control Board, ABAG, and the counties. Its total cost of \$21,000 would be paid for out of a State Solid Waste Management Board grant.

8. The fourteen policy is that "waste reduction, source separation, and recovery of hazardous industrial wastes should be promoted in the interest of limiting land disposal." Under this policy, Action 14.1 is to encourage industry to make changes in its processes to reduce the amount of hazardous waste generated. It would be implemented by the State Department of Health, and RWQCB. It has an annual cost of \$13,000 and would be financed by the Federal Resource Conservation and Recovery Act, State funds, and the California Pollution Control Financing Authority.

Action 14.2 is to encourage industry to avoid mixing its wastes so as to facilitate recycling. This would be implemented by the State Department of Health and ABAG at an annual cost of \$13,000. It would be paid for by the Federal Resource Conservation and Recovery Act and State funds.

Also under this policy, Action 14.3 is to encourage resource recovery. Incentives would be provided by the U.S. Congress, EPA and the State Legislature. They would include:

- o Low interest loans for new equipment (implemented by the State Department of Health and SSWMB).
- o A Statewide waste exchange and marketing system (implemented by the State Department of Health).
- o Guidance to industry on reusing waste (implemented by the State Department of Health).
- o Charges to dispose of materials at Class I sites with exemptions for installation with recovery equipment (implemented by the State Department of Health).

The total cost of Action 14.3 is \$18,000. Financing would be from the Federal Resource Conservation and Recovery Act, the California Pollution Control Financing Authority, and other State funds.

Action 14.4 seeks to investigate the possibility of hazardous waste consolidation to facilitate waste processing and recovery. Implemented by the State Department of Health and ABAG, it would cost \$3,000 per year and be financed by the Federal Resource Conservation and Recovery Act as well as State funds.

9. Policy 15 in the Solid Waste Management Plan is that "regulations should ensure safe and proper handling of hazardous wastes." Action 15.1 under this policy seeks to enforce proper labeling requirements. It would require that containers used for the storage, transport, or disposal of hazardous wastes accurately identify their contents. Implementation would be by EPA and the State Department of Health. There are no costs involved.

Also under this policy, Action 15.2 seeks to enforce adequate storage facilities requirements. It would require that containers used for on-site storage and for disposal be made of proper materials and designed so as to minimize the hazards of leaking or breaking. This action would be implemented by EPA and the State Department of Health. It would be cost-free.

Action 15.3 would enforce requirements for adequate recordkeeping practices by waste generators. It would require that recordkeeping practices accurately identify the type and quantity of hazardous waste generated. Implementation is by EPA and the State Department of Health. There are no costs.

Also under this policy, Action 15.5 seeks to ensure proper handling of hospital wastes, and to require that infectious or pathological wastes from hospitals be disposed through incineration or processed for disposal to sewers. Implementation by the State Department of

Health would be completed by April 1980 at a cost of \$2,900 per year. Financing is by the Federal Resource Conservation and Recovery Act, in addition to State funds.

Action 15.6 is to establish and enforce regulations, including a permit and monitoring system, for on-site disposal of hazardous wastes. This action, with an annual cost of \$53,000, would be implemented by the State Department of Health, BAAPCD, RWQCB, and local agencies. Financing would be by the Federal Resource Conservation and Recovery Act, State funds, and disposal fees.

Finally under the fifteenth policy, Action 15.7 is to ensure stable funding for adequate enforcement of existing regulations by the State Department of Health and counties, as appropriated under the Federal Resource Conservation and Recovery Act and the State's Assembly Bill 1593 (1977). Implementation would be by the State Legislature and U.S. Congress as soon as possible. Costs of implementation are \$232,000, paid for via Assembly Bill 1593 (1977).

10. Policy 18 is that "facilities for wastewater solids management should be constructed in conformance with the Regional Wastewater Solids Plan and the Environmental Management Plan (208 plan). Under this policy, Action 18.2 is to review proposed facilities plans and approve those that are consistent with the regional Solid Waste Management Plan and the 20-year project list in the 208 plan. This action would be implemented by EPA, the State Water Resources Control Board, RWQCB, the State Department of Health, ABAG and the State clearinghouse. Implementation would be by 1979 at an annual cost of \$4,000. Funding would be by Federal and State grants, as well as local and State general funds.

Air Quality Management Plan

1. The second group of recommendations in this plan is for mobile source controls. The general policy here is to "minimize hydrocarbon emissions from motor vehicles." Under this policy, Action 5 is to implement more stringent vehicle (light duty and heavy duty) exhaust emission controls - approximately 50 percent reduction below 1977 prescribed levels. The California Air Resources Board (CARB) is the implementing agency. The action would be adopted by 1980 and fully implemented by 1990. Public agency costs would be \$3,000 per year, and private costs would be \$24,910,000 per year.

Also in this group, Action 6 is to implement an inspection/maintenance program for light and heavy duty vehicles. It would be implemented by CARB, and/or the State Bureau of Automotive Repair with adoption in 1978 and complete implementation by 1985. Agency costs would be \$1,395,000 per year, and private costs would be \$16,892,000 per year. Implementing legislation would be required.

Action 7 would require heavy duty gasoline exhaust control devices on existing vehicles. After adoption in 1979, this action would be

fully implemented by CARB in 1985. Agency costs would be \$8,000 per year, and private costs would be \$1,534,000 per year. New legislation would be required for implementation.

2. The third group of recommendations in the Air Quality Management Plan is for transportation controls. The general policy here is to "reduce motor vehicle emissions through transportation actions to reduce vehicle use." Under this policy, Action 8 is to increase tolls on bridges. It would be implemented by MTC and the California Toll Bridge Authority by 1980. The measure would generate annual toll revenues of \$13,000,000.

Also under this policy, Action 12 seeks to increase bus and carpool lanes/ramp metering. The action would be implemented fully by 1985 by Caltrans, transit districts, cities and counties. The public cost of this action would be \$7,438,000, and State and Federal funds might be available.

Transportation controls also include Action 14, which is to provide more ride sharing services such as jitneys and vanpools. This action would be implemented by Caltrans, employers, and MTC. It has been previously adopted and would be fully implemented by 1979. The public cost of \$300,000, with financing by Federal Mass Transportation Assistance programs.

Action 15 in this group is to develop more extensive bicycle systems. It would be adopted in 1980 and implemented by 1985 by cities, counties, MTC, and Caltrans. It has a public cost of \$438,000, with financing by Federal funds.

3. The fourth set of recommendations is that for development and land use management. This set is comprised of 16 policies and 49 actions. Among the agencies with implementation responsibilities for the set are the State Water Resources Control Board and Caltrans. All of these policies and actions are set out in a previous section of this chapter entitled "Actions Applicable to Cities and Counties Generally."

ACTIONS APPLICABLE TO REGIONAL AGENCIES OTHER THAN ABAG

Many Regional agencies are designated to implement the Environmental Management Plan. ABAG's actions were described in the previous section of this chapter. This section describes actions applicable to other regional agencies:

- o San Francisco Bay Regional Water Quality Control Board (RWQCB) - Water Quality Management Plan, Water Supply Management Plan, Solid Waste Management Plan.
- o San Francisco Bay Conservation and Development Commission (BCDC) - Water Quality Management Plan, Solid Waste Management Plan.
- o Water Management Coordinating Committee - Water Supply Management Plan.
- o Bay Area Air Pollution Control District (BAAPCD) - Air Quality Management Plan, Solid Waste Management Plan.
- o Coastal Zone Conservation Commissions - Solid Waste Management Plan.
- o San Francisco Bay Region Wastewater Solids Study - Solid Waste Management Plan.
- o Metropolitan Transportation Commission (MTC) - Air Quality Management Plan, Solid Waste Management Plan.
- o Bay Area Rapid Transit District (BART) - Air Quality Management Plan.

Agency representatives need consult only those plans for which their agency will have implementation responsibility, as listed above.

Water Quality Management Plan

1. The first policy in this plan is to "improve understanding of Bay system and the fate and effects of pollutants entering it." Under this policy, Action 1.1 is to establish a San Francisco Bay Delta Research Program (SFBDRP). The effectiveness of pollution control actions is impaired by our limited knowledge of the ways in which bay waters and aquatic life are affected by pollutants. The recommended program will provide further information on the pollution cause and effect relationship and translate information into better standards for water quality protection. Monitoring and analysis will be centralized with a consequent savings in cost and an improvement in accuracy. Annual reports on pollution control will keep the public informed about the state of the bay. This action would be implemented by ABAG, in consultation with all affected parties, including RWQCB. Target implementation date is August, 1978 at a cost of \$185,000. This would be paid for by State and EPA grants and fees from dischargers.

Also under the first policy, Action 1.2 is to establish the research goals of SFBDRP. The action would be implemented by SFBDRP and RWQCB by December 1978. The cost of the item is included in Action 1.1's cost of \$185,000.

2. The second policy in this plan is to "establish continuing planning process for water quality management." Action 2.3 under this policy is to sign a memorandum of agreement establishing procedures for continuing planning. The agreement would be between RWQCB and ABAG, signed by March 1978, and without cost.

Also under this policy, Action 2.4 is to update the water quality management plan in conformance with other environmental goals. As the population grows and information on pollutant effects and the effectiveness of control measures accumulates, the plan must be updated. This action would be undertaken by ABAG and RWQCB every two years after August 1978. It would cost \$46,000 per year, funded by State appropriation and EPA grants.

3. Policy 4 in this plan is to "ensure that water pollution facilities or measures effectively protect water quality." Under this policy, Action 4.1 seeks to issue and update monitoring requirements appropriate to permit conditions and in conformance with the regionwide monitoring network. As the program of treatment plant construction winds down, the emphasis in water pollution control will shift from construction to operation and monitoring. This action would be implemented by RWQCB on a continuous basis. Its yearly cost of \$160,000, none of which is directly attributable to this plan, would be covered by a State appropriation.

Also under this policy, Action 4.3 is to publish an annual report summarizing the results of dischargers' self-monitoring programs. RWQCB would implement this action in cooperation with the San Francisco Bay Delta Research Program. Annual costs of \$32,000 would be paid for by the State.

4. The fifth policy in the Water Quality Management Plan is to "provide facilities needed for municipal sewerage service and water quality protection." Under this policy, Action 5.2 is to issue and update limits for municipal discharges in conformance with the Environmental Management Plan. RWQCB would have responsibility for this action, which would be done on a continuous basis. The annual cost would be \$94,000, none of which is directly attributable to this plan, and it would be financed by a State appropriation.

Also under the fifth policy, Action 5.3 is to update the twenty year project list consistent with other elements of the Environmental Management Plan. This action has a yearly cost of \$7,000 and would be performed by ABAG and RWQCB. Financing would be by State appropriation and EPA grants.

5. Policy 8 in this plan is to "establish a program of surface runoff controls that emphasize low cost measures to reduce the pollutant loads from this source." Action 8.2 under this policy is to control the use of certain chemicals. This action seeks to educate the user and general public on the proper use and disposal of hazardous chemicals, to regulate the use of certain chemicals, and to encourage oil recycling. It

is implemented by county solid waste management agencies, county governments and special districts in Marin, Santa Clara, Solano, and Alameda Counties, regional agencies, the State Department of Health, and the State Solid Waste Management Board. The total yearly cost of this action is undetermined but estimated to be at least \$1,100. It would be paid for out of local funds, State funds, and the Federal Resource Conservation and Recovery Act.

6. The ninth policy in this plan is to "provide facilities needed for industrial wastewater treatment and disposal and water quality protection." Action 9.2 under this policy is to issue and update permits for direct industrial discharges. The implementing agency is RWQCB, the annual cost of the action is \$220,000 (none of which results from this plan), and financing is by State appropriation.

7. Policy 10 is to "reduce sewage pollution from small boats in marinas, harbors and enclosed bays." Action 10.2 is to establish no-discharge zones within the Bay Area for treated or untreated sewage. Marinas, harbors, shellfish harvesting areas and water contact recreation areas would be declared no-discharge zones if present practices are proven ineffective. Enforcement would be by the U.S. Coast Guard. This action would be implemented by the State Water Resources Control Board, RWQCB, and the Coast Guard. It is cost-free to public agencies.

Also under the tenth policy, Action 10.3 is to inform the boating public about marine sanitation device programs, to provide information on the types of devices, the matching shoreside facilities, schedules, procedures, and costs. It would be implemented by ABAG and RWQCB at an annual cost of \$5,000 to be paid for by State appropriation.

8. Policy 11 is to "improve wastewater disposal practices in unsewered areas consistent with regionwide development policies." Under this policy, Action 11.1 will establish minimum regionwide standards for on-site disposal systems. These standards would be for the selection, design, evaluation and construction of on-site systems awaiting a "future" sewer. The standards would be developed by RWQCB with assistance from the County Health Departments and ABAG. The standards would be developed by December 1979, and revised annually. Standard development would cost \$10,000, paid for by Federal grants, State funds and local funds.

9. Policy 12 in this plan is to "monitor effectiveness of existing arrangements for preventing and dealing with oil and chemical spills in Bay Area." Action 12.1 under this policy is to monitor the performance of all agencies in dealing with spills. These agencies include the U.S. Coast Guard, the State Department of Fish and Game, EPA, RWQCB, State and County Offices of Emergency Services, local fire departments and local contractors. This action would be undertaken by BCDC continuously after October 1978. Its annual cost of \$15,000 would be paid for out of State funds.

Also under the twelfth policy, Action 12.2 is to report formally to the Governor, EPA Administrator and Secretary of Transportation on Coordination, prevention efforts, cleanup performance and recommended actions. BCDC would do this annually after October 1978 at a cost of \$15,000 to be covered by State funds.

Water Supply Management Plan

1. The first policy in this plan is to "provide a safe and reliable water supply to all citizens at a minimum monetary and environmental cost." Action 1.1 is to establish a water resource management coordinating committee (WMCC). The WMCC will include representatives of all major water and wastewater agencies in the Bay Area. The WMCC will provide a forum for discussion and resolution of issues of mutual interest to water management agencies. The action would be implemented by WMCC by March 1978. The cost would be \$9,400, paid for by committee members' dues.

Action 1.2 under this policy is to evaluate the benefits and feasibility of increased interagency water transfers. It would be implemented by WMCC by July 1978. The cost of this action would be \$8,000, covered by dues paid by committee members.

Also under this policy, Action 1.3 is to evaluate the costs and benefits of accepting restriction on water use during drought. WMCC would do this by July 1978 at a cost of \$16,000. Financing would be by committee members' dues.

Action 1.5 is to prepare a drought contingency plan. This would be done by WMCC and water agencies in 1978. The cost of doing this is \$32,000 and would be paid for by user charges.

Action 1.6 under the first policy is to conduct a survey of the status, use and plans for all groundwaters in the region. This would be implemented by WMCC during 1978-79. Its cost of \$16,000 would be covered by Federal grants and dues paid by committee members.

Finally under this policy, Action 1.7 is to prepare a regional groundwater basin management plan, contingent upon the results of Action 1.6 (above). Implementing agencies would be WMCC, ABAG, and RWQCB. This action is scheduled for 1979-80. Costs are as yet undetermined. It would be paid for by local funds supplemented by State and Federal grants.

2. The second policy in the Water Supply Management Plan is to "encourage water saving." Action 2.3 under this policy is to establish a regionally coordinated public information/education program. This would be done by WMCC and ABAG by December 1978. Its annual cost of \$8,600 would be paid for by committee members' dues.

Action 2.5 under this policy is to publish an annual water use and conservation report. WMCC and ABAG would do this at an annual cost of \$18,000, paid for by committee members' dues.

Also under the second policy, Action 2.7 is to conduct a study to determine the savings in sewage treatment costs attributable to water conservation. WMCC and ABAG would do this by April 1978 at a cost of \$4,000. State and Federal grants may be available to finance the task.

3. Policy 3 in this plan is to "encourage reuse of wastewater where cost-effective." Action 3.1 under this policy is to conduct a regional reclamation study. WMCC would do this. The cost of \$161,000 would be covered by EPA and State grants.

Action 3.2 in this plan is to develop a priority system for allocation of grant monies for reclamation projects. This would be done by RWQCB by December 1978 at a cost of \$5,800.

Solid Waste Management Plan

1. The fourth policy in this plan is that "all solid waste disposal sites must be situated, designed and operated to provide protection to the surface and ground water quality and the natural environment as well as protection of public health and safety." Action 4.1 under this policy is to accelerate the adoption and updating of the Waste Discharge Requirements for all landfill sites. This would be done by RWQCB by June 1979 at a cost of \$184,000 per year. None of the cost results directly from this plan. Financing would be by State general funds.

2. Policy 6 in this plan is that "agencies' existing regulations, including time limits for review and comments, should be clarified and additional ones should be adopted where necessary to formalize procedures used in processing of or commenting on applications."

Action 6.1 under this policy is to clarify existing agency regulations that establish procedures for processing permit applications and adopt additional regulations where necessary. Existing procedures should be made understandable to other agencies and to applicants for permits. This action would be implemented by all permitting agencies, including RWQCB, BAAPCD, BCDC, and the Coastal Zone Conservation Commissions. Implementation is expected to cost a total of \$1,500 per year, which would be covered by county general funds, fees, surcharges, and regulatory agency operating funds.

Policy 6 also includes Action 6.2, which is that responsible agencies will set and adhere to time limits, and commenting agencies will adhere to the time limits set by regulatory agencies. This action would be implemented by all permitting agencies, including RWQCB, BAAPCD, BCDC, and the Coastal Zone Conservation Commissions, by 1978. This action is without cost.

3. The eleventh policy in this plan is that "Federal and State governments should adopt legislative and administrative changes to improve competitive positions of secondary materials and products containing secondary materials." Action 11.2 is to adopt preferential purchasing policies for secondary materials where appropriate. It would be implemented by ABAG, regional agencies and local governments as soon as possible. The cost of this action is \$16,000 per year.

4. Policy 12 in the Solid Waste Management Plan is that "all levels of governments should encourage development of source separation programs." Action 12.3 seeks to establish office paper recycling programs. The

data and experience of public agency programs would be used to expand recycling into the private sector. This action would be implemented by ABAG, regional agencies, and local governments at a total cost of \$45,000. It would be paid for by sales of used paper. ABAG will start such a program.

5. Policy 13 is that "adequate planning for hazardous waste management requires accurate data." Action 13.3 seeks to determine whether or not additional Class I sites for disposal of hazardous wastes are needed in the Bay Area, and the waste quantities that can be handled at each existing Class I site. It would be implemented by the State Department of Health in conjunction with RWQCB, ABAG and the counties, on an ongoing basis. This action would cost \$21,000 and would be paid for by a SSWMB grant.

6. Policy 14 in the plan is that "waste reduction, source separation, and recovery of hazardous industrial wastes should be promoted in the interest of limiting land disposal." Under this policy, Action 14.1 is to encourage industry to make changes in its processes to reduce the amount of hazardous waste generated. It would be implemented by ABAG, the State Department of Health, and RWQCB. It has an annual cost of \$13,000 and would be financed by the Federal Resource Conservation and Recovery Act, State funds, and the California Pollution Control Financing Authority.

7. Policy 15 in this plan is that "regulations should ensure safe and proper handling of hazardous wastes." Action 15.6 under this policy is to establish and enforce regulations, including a permit and monitoring system, for on-site disposal of hazardous wastes. This action, with an annual cost of \$53,000, would be implemented by the State Health Department, BAAPCD, RWQCB, and local agencies. Financing would be by the Federal Resource Conservation and Recovery Act, State funds, and disposal fees.

8. The seventeenth policy in this plan is that "a regional plan for long-term wastewater solids management should be prepared and updated." Action 17.1 under this policy is to prepare a regional plan for long-term wastewater solids management as part of the regional Solid Waste Management Plan. This is to be done by the San Francisco Bay Region Wastewater Solids Study by 1978. The total cost is \$752,000, paid for by Federal and State grants as well as local funds.

9. Policy 18 in this plan is that "facilities for wastewater solids management should be constructed in conformance with the regional Waste-water Solids Plan and the Environmental Management Plan (208 plan)." Under this policy, Action 18.2 is to review proposed facilities plans and approve those that are consistent with regional Solid Waste Management Plan and the 20-year project list in the 208 plan. This action would be implemented by EPA, the State Water Resources Control Board, RWQCB, the State Health Department, ABAG and the State Clearinghouse. Implementation would be by 1970 at an annual cost of \$4,000. Funding would be by Federal and State grants, as well as local and State general funds.

Air Quality Management Plan

1. The first group of recommendations in this plan is for stationary source controls. The general policy here is to "minimize hydrocarbon emissions from stationary sources." Under this policy, Action 1 is to use paints and other coatings that are water based and/or have a high solids content. BAAPCD is the implementing agency. This action would be adopted by 1978 to 1980 and fully implemented by 1985 at a private cost of \$7,170,000.

Action 2 in this group is to use closed systems for storage and transfer of organic liquids. It would be implemented by BAAPCD - adopted in 1978 and fully implemented by 1983. This action has a private cost of \$17,000,000.

Action 3 in this group is to use the best available control technology (BACT) on new and existing hydrocarbon sources. The details of this are as follows:

<u>Process</u>	<u>Technology</u>
Organic storage.....	Dual and parallel vapor recovery
Tar Pots.....	Loading door assembly
Paint spray coatings.....	Incinerator or low/no solvent coatings
Architectural coatings.....	Low solvent coatings
Dry cleaning.....	Closed system with solvent recovery
Chemical milling.....	Fume incinerator
Cable tar coating.....	Incineration
Gasoline bulk storage.....	Floating roof or fixed roof and vapor recovery
Auto service station storage tanks.....	Closed balanced system with secondary system
Auto fill operations.....	Secondary vacuum assist system

This action would be implemented by BAAPCD. After adoption in 1980, full implementation would come in 1985. The public cost of this action would be \$529,000 and the private cost \$29,331,000.

Action 4 in this group is to continue the review of new and modified industrial and commercial facilities (new source review). It is currently being implemented by BAAPCD without cost to that agency.

2. The third group of recommendations in the Air Quality Management Plan is for transportation controls. The general policy here is to "reduce motor vehicle emissions through transportation actions to reduce use." Under this policy, Action 8 is to increase tolls on bridges. It would be implemented by MTC. Action 9 involves the implementation of a parking tax by 1981; the public cost would be \$15,000, and the

private cost, which would be in the form of parking charges, would be \$6,000,000. Action 10 involves the establishment of preferential parking for carpools and vanpools; it would be fully implemented by 1985 at a public cost of \$886,000.

Action 11 under this policy seeks to provide additional transit service. The action would be implemented fully by 1985 by MTC and local transit districts, including BART. The public cost of this action is \$18,540,000 defrayed largely by Federal and State funds.

Also in the transportation controls, Action 14 is to provide more ride sharing service such as jitneys and vanpools. This action would be implemented by Caltrans, employers, and MTC. It has been previously adopted and would be fully implemented by 1979. The public cost is \$300,000, with financing by Federal Mass Transportation Assistance programs.

Action 15 in this group is to develop more extensive bicycle systems. It would be adopted in 1980 and implemented by 1985 by cities, counties, MTC, and Caltrans. It has a public cost of \$438,000, with financing by Federal funds.

3. The fourth set of recommendations is that for development and land use management. This set is comprised of 16 policies and 49 actions. Among the agencies with implementation responsibilities for this set of recommendations are BAAPCD and MTC. The full set of policies and actions is set out in a previous section of this chapter entitled "Actions Applicable to Cities and Counties Generally."

ACTIONS APPLICABLE TO FEDERAL AGENCIES AND THE U.S. CONGRESS

The Environmental Management Plan designates several Federal agencies to be responsible for implementing various control measures. Actions are also directed to the U.S. Congress. The following list is of the agencies that have been selected and the plans in the overall EMP where their responsibilities are located.

- o United States Coast Guard - Water Quality Management Plan.
- o United States Environmental Protection Agency (EPA) - Water Quality Management Plan, Solid Waste Management Plan, Air Quality Management Plan.
- o United States Department of Transportation - Water Quality Management Plan, Air Quality Management Plan.
- o United States Army Corps of Engineers - Solid Waste Management Plan.

In addition, actions directed to the U.S. Congress are found in the Water Quality Management Plan, the Solid Waste Management Plan, and the Air Quality Management Plan.

Water Quality Management Plan

1. The tenth policy in this plan is to "reduce sewage pollution from small boats in marinas, harbors and enclosed bays." Action 10.2 is to establish no-discharge zones within the Bay Area for treated or untreated sewage. Marinas, harbors, shellfish harvesting areas and water contact recreation areas would be declared no-discharge zones if present practices are proven ineffective. Enforcement would be by the U.S. Coast Guard. This action would be implemented by the State Water Resources Control Board, RWQCB, and the U.S. Coast Guard. It is cost-free to public agencies.

2. Policy 11 in this plan is to "improve wastewater disposal in unsewered areas consistent with regionwide development policies." Action 11.6 is to revise State and Federal grants programs to ensure consideration for funding on-site systems. This would be for the purpose of increasing the number of on-site systems and maintenance district components eligible for funding. Implementing agencies are SWRCB and EPA. The action is without cost.

3. The twelfth policy in the Water Quality Management Plan is to "monitor effectiveness of existing arrangements for preventing and dealing with oil and chemical spills in Bay Area." Action 12.4 under this policy is to re-evaluate the need to upgrade the vessel traffic system in the Carquinez Straits and North San Pablo Bay. A report would be prepared examining the addition of high-resolution radar coverage to the subject areas. Implementation would be by the U.S. Coast Guard by June 1979. The cost of \$1,000 would be paid for by Federal funds.

Also under this policy, Action 12.6 is to enact Federal legislation on liability requirements for spillers and compensation for damage. Implementation

is by U.S. Congress. Costs are undetermined.

Action 12.8 is to promulgate final Federal regulations proposing improvements in requirements for navigational aids and tanker construction. Proposed U.S. Department of Transportation standards issued on May 13, 1977 include:

- o Double bottoms on new large tankers.
- o Segregated ballast on new large tankers
- o Inert gas systems on all crude oil tankers
- o Backup radar systems with collision avoidance equipment on all large tankers.
- o Improved emergency steering standards for all tankers.

This action would be implemented by the U.S. Department of Transportation and the U.S. Congress. Costs of implementation are undetermined, but if the proposed standards are finalized, the initial construction cost to bring U.S. vessels up to the standards has been estimated to be \$120,000.000.

Water Supply Management Plan

1. Policy 2 in this plan is to "encourage water saving." Action 2.4 seeks to enact legislation to provide incentives for retrofitting domestic water conservation devices and agricultural water conservation. Implementation would be by the State Legislature and the U.S. Congress. Costs are undetermined.

Solid Waste Management Plan

1. Policy 3 in this plan is that "regional or subregional resource conservation and recovery programs should be consistent with the regional Solid Waste Management Plan and the Environmental Management Plan, and should focus on multi-jurisdictional projects for waste reduction and recovery of materials and energy from solid waste." Action 3.1 under this policy is to review proposed resource recovery projects including large-scale waste combustion projects to ensure consistency with regional solid waste management and other environmental goals and standards. This action would be implemented on an ongoing basis by EPA, SSWMB, ABAG and the State Clearinghouse. Its cost of \$6,000 per year, none of which results directly from this plan, would be paid for by Federal and State funds in addition to ABAG dues.

Also under this policy, Action 3.2 is to develop additional information that would lead to the construction of a network of new resource recovery facilities. This action would be implemented by EPA and SSWMB, in conjunction with cities, counties and ABAG. It would be implemented by 1982 at a cost of \$996,000, which would be paid out of Federal and State funds.

2. The sixth policy in this plan is that "agencies' existing regulations,

including time limits for review and comments, should be clarified and additional ones should be adopted where necessary to formalize procedures used in processing of or commenting on applications." Action 6.1 under this policy is to clarify existing agency regulations that establish procedures for processing permit applications and adopt additional regulations where necessary. Existing procedures should be made understandable to other agencies and to applicants for permits. This action would be implemented by all permitting agencies, including the U.S. Army Corps of Engineers. Implementation is expected to cost a total of \$1,500 per year, which would be paid for by county general funds, fees, surcharges, and regulatory agency operating funds.

Also under Policy 6 is Action 6.2, which states that responsible agencies will set and adhere to time limits, and commenting agencies will adhere to the time limits set by regulatory agencies. This action would be implemented by all permitting agencies, including the U.S. Army Corps of Engineers, by 1978. This action is without cost.

3. Policy 8 in the Solid Waste Management Plan is that "public education programs are essential to promote awareness of need for waste reduction." Action 8.1 is that Federal and State governments should make funds available to support education programs for promoting waste reduction. These programs would be aimed at primary and secondary schools, households, stores and offices, and manufacturing plants. It would be implemented by State government and Federal government at a yearly cost of \$2,500. Financing would be with State and Federal funds.

4. Policy 9 in this plan is that "Federal and State governments should adopt legislative and administrative changes which promote waste reduction." Action 9.1 is to change manufacturing standards and regulations, where appropriate. These changes might be needed to: (a) Reduce excess packaging; (b) Prohibit manufacture of certain products, such as disposable containers; (c) Limit the number of container sizes; (d) Increase the service life of products, e.g. appliances; and (e) Design criteria (such as for modular components) to make repair more attractive than replacement. This action would be implemented by the U.S. Congress, the Federal administration, the State Legislature, and the State administration. This is an action without cost.

5. The eleventh policy in this plan is that "Federal and State governments should adopt legislative and administrative changes to improve competitive positions of secondary materials and products containing secondary materials." Under this policy, Action 11.1 seeks to change existing Federal and State laws and regulations to improve competitive positions of secondary materials and products containing secondary materials. Changes in the following areas are recommended:

- o Change tax laws to eliminate favored status of virgin materials.
- o Introduce Federal surtaxes or disposal charges on prices of virgin materials.

- o Reform Interstate Commerce Commission's rate structure to establish favorable competitive positions for secondary materials.
- o Require a certain percentage of secondary materials to be contained in specific products, where feasible, and set maximum permissible quantities of virgin materials in specific products.

This action would be implemented by the U.S. Congress and the Federal administration as soon as possible. There are no costs.

6. Policy 12 in this plan is that "all levels of governments should encourage development of source separation programs." Action 12.2 would fund demonstration projects on source separation and recycling projects, including oil recovery, at the local, State and Federal levels. The action would be implemented by the State Legislature and the U.S. Congress at a total cost of \$3,000,000. The costs would be financed by State and Federal funds.

7. Policy 14 is that "waste reduction, source separation, and recovery of hazardous industrial wastes should be promoted in the interest of limiting land disposal." Under this policy, Action 14.3 is to encourage resource recovery. Incentives would be provided by the U.S. Congress, EPA, and the State Legislature. They would include:

- o Low interest loans for new equipment
- o A statewide waste exchange and marketing system.
- o Information dissemination through business associations.
- o Guidance to industry on reusing waste.
- o Charges to dispose of materials at Class I sites with exemptions for installation with recovery equipment.

The total cost of this action is \$18,000. Financing would be from the Federal Resource Conservation and Recovery Act, the California Pollution Control Financing Authority, and other State funds.

8. Policy 15 in the Solid Waste Management Plan is that "regulations should ensure safe and proper handling of hazardous wastes." Action 15.1 under this policy seeks to enforce proper labeling requirements. It would require that containers used for the storage, transport, or disposal of hazardous wastes accurately identify their contents. Implementation would be by EPA and the State Department of Health. There are no costs involved.

Action 15.2 under this policy seeks to enforce adequate storage facilities requirements. It would require that containers used for onsite storage and for disposal be made of proper materials and designed so as to minimize the hazards of leaking or breaking. This action would be implemented by EPA and the State Department of Health. It would be cost-free.

Also under this policy, Action 15.3 would enforce requirements for adequate record keeping practices by waste generators. It would require that record keeping practices accurately identify the type and quantity of hazardous waste generated. Implementation is by EPA and the State Department of Health. There would be no cost.

Finally under the fifteenth policy, Action 15.7 is to ensure stable funding for adequate enforcement of existing regulations by the State Department of Health and counties, as appropriated under the Federal Resource Conservation and Recovery Act and the State's Assembly Bill 1593 (1977). Implementation would be by the State Legislature and the U.S. Congress as soon as possible. Costs of implementation are \$232,000, paid for via Assembly Bill 1593 (1977).

9. Policy 18 is that "facilities for wastewater solids management should be constructed in conformance with the regional Wastewater Solids Plan and the Environmental Management Plan (208 plan)." Under this policy, Action 18.2 is to review proposed facilities plans and approve those that are consistent with the regional Solid Waste Management Plan and the 20-year project list in the 208 plan. This action would be implemented by EPA, the State Water Resources Control Board, RWQCB, the State Department of Health, ABAG and the State clearinghouse. Implementation would be by 1979 at an annual cost of \$4,000. Funding would be by Federal and State grants, as well as local and State general funds.

Air Quality Management Plan

The fourth set of recommendations in the Air Quality Management Plan is for development and land use management. The general policy here is to "alter regionwide development patterns to reduce automobile travel by means of local and regional policies on land use and urban services." This set of recommendations is comprised of 16 policies and 49 actions, which are set out in a previous section of this chapter entitled "Actions Applicable to Cities and Counties Generally." Among the agencies with implementation responsibilities for these recommendations are the U.S. Department of Transportation and EPA.

ACTIONS APPLICABLE TO PRIVATE INDUSTRY AND OTHER NON-GOVERNMENTAL AUTHORITIES

Several of the recommended actions in the Environmental Management Plan would be implemented by private industry and other individuals. As in previous chapters, these are listed by Management Plan.

Water Quality Management Plan

1. The third policy in this plan is to "re-establish recreational and commercial shellfish harvesting in the Bay." Action 3.1 is to conduct a preliminary survey and assessment of shellfish beds in the Bay. Major shellfish beds suitable for recreational harvesting would be identified and assessed. The types and sources of contaminants affecting these beds would also be identified. This action would be implemented by the State Department of Health, the State Department of Fish and Game, and/or a private consultant by February of 1978. The cost of \$50,000 would be paid for out of an EPA and/or State grant.

2. Policy 4 in this plan is to "ensure that water pollution facilities or measures effectively protect water quality." Action 4.2 under this policy is to monitor the performance of municipal and industrial wastewater systems in accordance with monitoring requirements. This action would be implemented on a continuous basis by sewerage agencies and individual private companies at undetermined cost (none of it directly attributable to this plan). Financing would be by local and private funds.

3. The ninth policy is to "provide facilities needed for industrial wastewater treatment and disposal and water quality protection." Under this policy, Action 9.1 is to expand existing and provide new facilities for treatment and disposal of industrial wastes discharged directly to the environment. Direct industrial discharges that may have to be treated to a higher degree than at present are listed in the Water Quality chapter of Volume I. This action would be implemented by individual private companies. The cost if \$25,000,000, none of which results directly from this plan. Private funds would provide financing, supplemented by low-interest rate loans available as authorized by the California Pollution Control Financing Act. Sanctions can be imposed by RWQCB for non-compliance with permit conditions.

Action 9.3 is to expand existing and provide new facilities for pre-treatment of industrial wastewaters discharged to municipal sewer systems. Only that degree of treatment necessary to meet the municipalities' discharge requirements is recommended at this time. Individual private companies would implement this action on a continuous basis. The costs are undetermined, though if all indirect dischargers had to treat to the same level of abatement as direct dischargers, the cost would be \$15,000,000. Private funds and low-interest rate loans would finance the action. Sewerage agencies receiving these wastes can ensure implementation.

4. Policy 10 in this plan is to "reduce sewage pollution from small boats in marinas, harbors and enclosed bays." Action 10.4 under this policy is that all marinas and harbors would provide vessel holding tank pumpout facilities. Implementation is by marina/harbor owners by January of 1980. The cost of \$500,000 would be financed by local and private funds in addition to funds from the State Department of Navigation and Ocean Development. The State Water Resources Control Board and BCDC can ensure implementation of this action through their permit programs.

Also under the tenth policy, Action 10.5 is for all marinas, harbors, and boat launch areas to provide on-shore toilet facilities. Most appear to have adequate facilities at present, although there are some exceptions. The action would be implemented by January 1980 by Marina/harbor/boat launch area owners. The costs are undetermined. Financing is by local and private funds in addition to loans and grants from the State Department of Navigation and Ocean Development. There is no mechanism yet to ensure implementation of this action in existing facilities, but BCDC can do so for new facilities.

5. The eleventh policy in this plan is to "improve wastewater disposal practices in unsewered areas consistent with regionwide development policies." Action 11.5 is to promote research of on-site disposal systems. The action seeks to improve on-site systems, develop new design and construction criteria, and develop new systems. It would be implemented by the Governor's Office of Appropriate Technology and private industry on an ongoing basis. Its cost is undetermined. Financing would be by State funds and perhaps Federal subsidies or private funds.

Water Supply Management Plan

1. The second policy of this plan is to "encourage water saving." Action 2.1 is to implement "moderate" residential water savings programs. These emphasize encouraging retrofit of water savings devices in existing homes and mandating the building in of water savings devices in new construction. This action would be implemented by local water supply agencies and homeowners by December of 1978. Its total cost is \$1,420,000, of which \$1,270,000 can be attributed to this plan. Financing would be by user charges and private funds.

Also under this policy, Action 2.8 calls for the implementation of an agricultural water conservation program. If enacted, it would require farmers to adopt more efficient irrigation measures. Implementation would require State legislation, and the action would be feasible only on a Statewide basis. It would be implemented by farmers and local irrigation districts at a cost of \$3,780,000. Financing would be by private funds.

Solid Waste Management Plan

None of the actions in this plan would be implemented by private industry or other private individuals.

Air Quality Management Plan

1. The third group of recommendations in this plan is for transportation controls. Within this group, the general policy is to "reduce vehicle use." Actions 9 and 10 under this policy seek to implement a regional parking strategy to discourage private auto use and encourage high-occupancy auto use. The implementing agencies are cities, counties, employers and MTC. Action 9 involves the implementation of a parking tax by 1981; the public cost would be \$15,000, and the private cost, which would be in the form of parking charges, would be \$6,000,000. Action 10 involves the establishment of preferential parking for carpools and vanpools; it would be fully implemented by 1985 at a public cost of \$886,000.

Action 14 in the transportation controls is to provide more ride sharing services such as jitneys and vanpools. This action would be implemented by Caltrans, employers, and MTC. It has been previously adopted and would be fully implemented by 1979. The public cost if \$300,000, with financing by Federal Mass Transportation Assistance programs.

Chapter III

**FEDERAL AND
STATE REQUIREMENTS**



In addition to requiring the preparation of an areawide waste treatment management plan, Section 208 of the Federal Water Pollution Control Act Amendments of 1972 specifies which water pollution problems are to be addressed by the plan. In other words, the substantive nature of the plan is specified by the act (and EPA regulations implementing the act). Similarly the Clean Air Act Amendments of 1977 (and EPA regulations applicable to implementing that act) provide certain requirements for an air quality plan. The solid waste portion of the Draft Environmental Management Plan is prepared under several Federal and State laws. This chapter of Volume II of the Draft EMP indicates how the requirements of these Federal and State laws and regulations are met by the plan.

WATER QUALITY REQUIREMENTS UNDER SECTION 208 OF THE FEDERAL WATER POLLUTION CONTROL ACT

Detailed requirements are included in the act and summarized in EPA regulations, specifically section 131.11 of Volume 40 of the Code of Federal Regulations, Part 130.

This section describes how the plan content compares with the Federal requirements.

a. Planning boundaries

Planning boundaries are shown in Figure I of Chapter I of the draft EMP, Volume I. Areas requiring Section 201 facilities planning studies are included in the twenty-year project list. Locations of water quality and effluent limitation segments and significant dischargers remain the same as in the Basin Plan. Locations of monitoring stations are also shown in the basin plan. The draft EMP contains a recommendation for formation of a centralized regional water quality monitoring and research organization(Water Quality Action 1.1). In addition, the SWRCB is proposing a regional monitoring program.

b. Water quality assessment and segment classifications

Water quality assessment was undertaken using two mathematical water quality simulation models - the link-node model and a finite element model. Both dry weather and wet weather conditions were modeled. Results are described in:

Water Quality Technical Memorandum 19, Preliminary S.F. Bay Modeling Results, June 1977

Water Quality Technical Memorandum 21, Further S.F. Bay Modeling Results, July 1977

Water Quality Technical Memorandum 23, Modeling Results-II, August 1977

Assessment of Potential Impacts of Non-Point Source Loads on Shellfish Resources. Resource Management Associates, November 1977

Detailed Modeling of Special Study Areas. Resource Management Associates, December 1977.

Segment classifications as defined in the Basin Plan were reviewed in the light of the water quality assessment. No changes are recommended. Classifications are included in Section H of the Water Quality Plan in the draft EMP.

c. Inventories and projections

Results are described in:

Provisional Series 3 Projections, March 1977.

Water Quality Technical Memorandum 11, Population and Employment Figures by Sewerage Units, May 1977.

Water Quality Technical Memorandum 15, Estimated Municipal and Non-discrete Industrial Wastewater Loads. May 1977.

Water Quality Technical Memorandum 32, Revised Wastewater Flows Based on Compact Development Recommendation (in preparation).

d. Nonpoint source assessment

The nonpoint source was completed with the help of two different mathematical models; the Microscopic Planning Model (MAC) and the Storm Water Management Model (SWMM). MAC was applied to 59 major watersheds, which were subdivided into three types of subareas; (1) natural or protected areas, synonymous with background loads, (2) potentially developable areas where preventive measures (ordinances and planning controls) may have the greatest impact, and (3) existing urban areas where remedial measures may have the greatest impact. SWMM was applied to 13 demonstration watersheds for more detailed assessment of nonpoint source pollution and effect of mitigation measures. Both models were calibrated using locally collected samples (600 samples from 55 storm events, each analyzed for up to 27 different quality parameters). A key element in nonpoint source pollutants assessment was the direct involvement (both modeling and monitoring) of the local County Lead Agencies. The results are published in eight individual county reports summarized in the draft EMP, Vol. I. The intermediate results were published in a series of Surface Runoff Technical Memoranda and Briefs to EMTF.

e. Water quality standards

Water quality objectives as defined in the Basin Plan were reviewed. No changes are recommended with the exception of an addition to the standards for delta outflow. Results are described in:

Brief to EMTF, Future Water Quality and Pollution Problems, June 1977.

The Effect of Delta Outflow on Density, Stratification in San Francisco Bay, Hugo B. Fischer, Inc. Waterfront Design Associates, June 1977.

Water Quality Technical Memorandum 28, Recommendations on Maintenance of Outflow Rates from the Sacramento-San Joaquin Delta, November 1977.

f. Total maximum daily loads

The technical limitations of the analytical tools available to estimate the assimilative capacity of water quality segments are such that it was concluded that it would not be useful to attempt to estimate total maximum daily loads. The most significant water quality limited segment in the region is the extreme South Bay. The basin plan recommends that municipal and industrial discharges be eliminated in this segment. This recommendation remains controversial. A major discharger to the segment is currently undertaking a detailed analysis of

waste assimilation in the segment. If an attempt is to be made to establish a total maximum daily load it should be deferred until this analysis is complete.

g. Point source load allocations

Because total maximum daily loads were not estimated, a point source load allocation was not carried out.

h. Municipal waste treatment system needs

Municipal waste treatment system needs are shown in the twenty year project list in the draft EMP, Volume I.

i. Industrial waste treatment system needs

Industrial waste treatment system needs are not directly related to water quality via waste load allocations. The needs are simply to meet the Federal effluent limitations. Significant direct industrial discharges are identified in Section K of Chapter III of the draft EMP. All dischargers meet the 1977 best practicable treatment requirement. Most will need further treatment facilities to meet the 1983 or 1984 best available treatment requirement.

j. Nonpoint source control needs

Control needs for nonpoint sources are described in:

- i Agriculture - Nine individual surface runoff plans
- ii Silviculture - Determined not to be significant in planning area
- iii Mining - Water Quality Technical Memorandum 17 Significance of Pollution Problems Resulting from Extraction of Mineral Resources.
- iv Construction Activities - Nine individual surface runoff plans
- v Land Disposal Affecting Water Quality - Determined not to be significant in region
- vi Hydrologic modifications - The Effect of Delta Outflow on Density Stratification in San Francisco Bay, Fischer-Waterfront Design Associates June, 1977, Effects of Delta Outflow on San Francisco Bay System, J.B. Gilbert and Associates, October, 1977 and Water Quality Technical Memorandum 28 Recommendation on Maintenance of Outflow Rates from Sacramento-San Joaquin Delta is Draft EMP water quality action 2.2.

k. Residual Waste Control Needs

Residual waste control needs and land disposal needs are included in the solid waste management Chapter of draft EMP Volume I. Results of the San Francisco Bay Region Wastewater Solids Study are also included by reference in the same Chapter.

In addition to the existing documentation, identification of the necessary controls is described in nine solid waste technical memoranda:

Solid Waste Technical Memorandum 1, Status of Existing Landfill Sites in the San Francisco Bay Region, March 1977.

Solid Waste Technical Memorandum 2, Existing Authorities for Hazardous Waste Management, April 1977.

Solid Waste Technical Memorandum 3, Action Program to Reduce Waste Generation and to Promote Source Separation and Recycling in the Bay Area, April 1977.

Solid Waste Technical Memorandum 4, Issues in Current Permit Approval System for Solid Waste Management Facilities and Disposal Sites, April 1977.

Solid Waste Technical Memorandum 5, Existing Practices for Hazardous Waste Management in the San Francisco Bay Area, May 1977.

Solid Waste Technical Memorandum 6, Current and Projected Quantities of Hazardous Industrial Wastes Produced in the San Francisco Bay Area, June 1977.

Solid Waste Technical Memorandum 7, Identification of Possible Class I Site Areas, July 1977.

Solid Waste Technical Memorandum 8, Elements of a Coordinated Permit Approval Process for Solid Waste Management Sites and Facilities, July 1977.

Solid Waste Technical Memorandum 9, Issues for Federal and State Legislative and Administrative Action to Promote Source Reduction and Resource Recovery from Solid Waste, August 1977.

1. Urban and industrial stormwater system needs

Facilities needed to control pollution from combined urban stormwater and sewage collection systems are included in the twenty-year project list in the draft EMP Volume I. Facilities or measures needed to control pollution from separate stormwater collection facilities are described in the individual county surface runoff control plans.

m. Target abatement dates

Schedule for needed facilities construction is included in twenty-year project list.

n. Regulatory programs

Water quality laws and regulations that affect the Bay Area have been inventoried and analyzed for their adequacy in meeting all planning requirements. The institutional framework having responsibility for implementing and enforcing these laws and regulations was also reviewed.

For each action in the Water Quality Chapter of the Environmental Management Plan, the legal authority to undertake that action is listed. Regulatory/enforcement agencies are also identified.

o. Management agencies

Designations are described in Section E of the Water Quality Chapter of the EMP. Agencies responsible for implementing each recommended action are identified in the recommendation tables throughout the draft EMP Volume I.

p. Environment, social and economic impact

The overall environmental, social and economic perspective of the plan is described in Chapter II of the draft EMP Volume I. The impacts of individual recommended actions are identified in the recommendation tables throughout the draft EMP Volume I. An assessment, of significant environmental impacts under the California Environmental Quality Act is included in the first chapter of this Volume - the Draft Environmental Impact Report.

SOLID WASTE REQUIREMENTS

The solid waste management plan meets section 208 requirements of residual waste control needs and land disposal needs. It identifies the necessary controls to be established over the disposal of pollutants on land to protect ground and surface water quality.

The plan recommends that the California Regional Water Quality Control Boards should speed up the adoption and updating of the Waste Discharge Requirements for landfill disposal sites, and that the California State Solid Waste Management Board and county enforcement agencies should issue and enforce permits for solid waste management facilities and disposal sites as required by existing State laws.

The plan is also consistent with the Federal Resource Conservation and Recovery Act of 1976, the California Solid Waste Management and Resource Recovery Act of 1972, and other Federal and State laws by recommending the following:

- Carry out county solid waste management plans.
- Support studies and demonstration projects of material and energy recovery from wastes.
- Advocate Federal, State and local action to promote waste reduction and resource recovery.
- Construct facilities for the handling and beneficial use of wastewater solids (sewage sludge).

AIR QUALITY REQUIREMENTS

Key air quality Maintenance Plan Requirements are covered in Volume 41, Number 86 of the Federal Register, May 3, 1976.

a. Analysis Period (s.51.42)

The time period analyzed must be at least 20 years. The time period used for the draft Environmental Management Plan is for the period that ends in the year 2000.

b. Projection of Emissions (s.51.44)

Emission projection requirements are satisfied by Section 4 of Chapter VI of the draft EMP, Volume I.

c. Allocation of Emissions (s.51.45)

Allocation of emissions are also covered by Section 4 of Chapter VI of the draft EMP, Volume I.

d. Projected air quality concentration (s.51.46)

Air quality concentration were projected for photochemical oxidant only, with sulfur dioxide and particulate concentration projections deferred to the continuing planning process, described in Section 10 of Chapter VI of Volume I of the draft EMP.

e. Data Sources of Growth and Development Projections (s.51.47)

The air quality management plan is designed to accommodate the range of population growth that might be reasonably expected through the year 2000 in the region. Growth projections are documented in the Provisional Series 3 Projections, March 1977, and in Appendix D of Chapter VI of the draft AQMP.

f. Data Base (s.51.48)

Air quality data used are cited in Section 4 of Chapter VI of the draft EMP. Applicable air quality data collected was considered in developing the baseline air quality for the analysis, and is discussed in Section 4 of the air quality Chapter.

g. Description of Techniques(s.51.49)

Techniques for the air quality chapter are described in Chapter VI of the draft EMP, and are also documented in 24 technical memoranda and three issue papers, which are listed in Appendix A of Chapter VI of the draft EMP.

h. Accuracy Factors (s.51.50)

Accuracy Factors are discussed in the technical memoranda and Appendix C of Chapter VI of the draft EMP--"Results of the LIRAQ Emissions Sensitivity Analysis."

i. Submittal of Calculations (s.51.51)

Calculations are included in the Chapter VI and the technical memoranda.

Other legal requirements (s.51.52 through 51.60) are satisfied through the measures to attain and maintain the Federal standard for photochemical oxidant. Numerical attainment of the oxidant standard should be achieved by carrying out the measures recommended according to the implementation schedule included in the plan. During the continuing planning process, the same requirements would be met for measures to achieve and maintain the other air quality standards.

It is also important to note the requirements of Section 172 (a) of the Clean Air Act Amendments of 1977 (P.L. 95-95). These requirements, and how the draft AQMP was designed to meet them, are discussed in Section 8 of Chapter VI of the draft EMP, pages VI-148 and VI-149.

PUBLIC PARTICIPATION REQUIREMENTS

This section describes public participation in the development and implementation of the plan.

I. ORGANIZATION AND ACTIVITIES OF THE PUBLIC PARTICIPATION PROGRAM

A. Establishment of the Areawide Policy Advisory Committee and Development of the Work Program.

The Areawide Committee (Environmental Management Task Force - EMTF) was created incorporating representatives of local government, the major affected regional agencies, and 13 target interest groups who would be most affected by the Plan and whose participation was therefore particularly sought. This third group included persons from organizations representing business, labor, ethnic minorities, good government, conservation, housing, agriculture and the elderly.

Upon its creation, the EMTF reviewed and revised the work program for the entire environmental management plan including the public participation program. The basic public participation program, as defined by the task force, was specifically designed to involve local government officials, special interest groups and the general public during the major phases of preparation, review, and approval of the environmental management plan. The program was designed to work with both regionwide organizations and to establish contacts and encourage participation by community groups in each of the 9 Bay Area counties. Part of the county participation work was to be aided by passing through portions of the public participation funds to each of the county lead agencies to conduct public participation programs in their counties in connection with preparation of the Surface Runoff Plan.

B. Participation in Preparation of the EMP.

1. During the first year, the public could participate in preparing the plan through several channels, all under the overall aegis of the EMTF.

- a. Nine open membership advisory committees reviewed and made suggestions for preparing each facet of the plan; Surface Runoff & Other Nonpoint Source Management Plans, Air Quality Maintenance Plan, Municipal/Industrial Dischargers Management Plan, Solid Waste Management Plan, Special Studies Advisory Committee, Water Conservation, Reuse, and Supply, Assessment, Projections, and Lead Agency Coordination. Comments by committee members on all major staff reports were recorded and answered as a part of all reports to the EMTF.

- b. Direct contact with local elected and appointed officials, citizen groups and media in all parts of the region was initiated to explain and build interest in the environmental management plan. Periodic reports were made to boards of supervisors and city councils, mayors' conferences, city managers' associations, planning directors and public works directors. Individual interviews were scheduled with key local elected officials and staff. A plan approval process was defined, debated, and approved as a result of these meetings that provides for a direct vote on the final proposed plan by each member jurisdiction at a special ABAG General Assembly in April 1978. Additionally, a working committee representing county administrators and city managers from each part of the Bay Area was established to work with ABAG staff in preparing and reviewing the plan.
- c. Contact with citizen groups throughout the region built another base of interest in the plan. The contact list of the individuals and organizations in the nine counties grew from 300 in July 1976 to more than 5,000 by the time the progress report on findings and proposals was released for comment in September 1977. Task force members met at roundtable discussions with citizens in each county twice during the first year to report progress and gather information for use in pending decisions facing them during plan preparation. The roundtable meetings involved 300 to 350 each time and produced specific recommendations which were accepted by the task force for incorporation in the plan.
- d. Media contacts were made to introduce the environmental management plan, explain ABAG, and build interest in the program. The early meetings received advanced media coverage in newspapers, radio and television. Key environmental and political writers were identified as a special high profile group to receive all EMTF agendas and many of the written materials. A special effort was made to identify ethnic minority media and newsletters published by special interest groups who should receive news releases, major reports and meeting notices.
- e. Through its Citizen Alliance program, ABAG supported citizen conferences focused the plan during the first year. These group meetings were intended to highlight environmental problems, the plan and planning process, and the consequences for specific groups and concerns. An estimated 900 persons participated in those meetings during that first year.

- f. Lead agencies in each county undertook a variety of programs in their respective areas including creation of both citizen and technical advisory committees, publication of their own special reports, workshops, and hearings of their own.
- g. Regular reports to a regional audience on the plan were made through Bay View, the ABAG newsletter and three special tabloid-format reports to describe the plan and its progress to date.
- h. Questionnaires were placed in depository libraries, distributed at meetings, and published in tabloids. An estimated 250 responses were received and forwarded to the task force for use in preparing the plan.

By the time the findings and proposals for the plan were prepared in September 1977, an estimated 1,000 persons and organizations had participated directly in preparing the draft. Another 15,000 had received information about the plan through direct mailings and meetings. It's not possible to estimate the number who have learned about the plan through the news media.

C. Program Evaluation.

The public participation program has been reviewed and adjusted several times during the year. Evaluation has been conducted through staff reviews at the end of each phase of the program; presentations to the EMTF Public Participation Committee, to the ABAG Citizen Services Committee and to the advisory Program Review Board; discussions with task force members; discussions with and questionnaires from the public at meetings.

Some of the results of these reviews were a stronger emphasis on the news media; a decision to produce a Sunday newspaper supplement if funding could be arranged; changing the location of certain public meetings; adding special briefings for local government officials and staff; translating meeting notices and a plan summary into Spanish and Cantonese; contacting county councils on aging, county human relations commissions and a variety of service clubs; and providing expanded support for more organizations who wanted to put on their own programs to discuss the plan.

II. RESULTS FROM PUBLIC PARTICIPATION

A. July 1976 through September 1977.

- 1. The EMTF has met regularly with high attendance, very strong interest, and guided every step in preparation of the environmental management plan. Many groups have set up support committees to guide and assist their representatives on the task force in their work.

2. Advisory committee comments have been responded to and incorporated in reports; or else specific statements have been made explaining why recommendations could not be incorporated.
3. The population, job, and land development projections for the study have been built on a combination of regional totals allocated in accordance with local development policies which were prepared in combination with local government staff.
4. County round-table meetings and individual questionnaires and letters identified some specific concerns for the plan.

In the Fall of 1976 the criteria for later evaluation of plan recommendations was discussed at the county round-tables. A number of changes were recommended which, taken together with comments from the Assessment Advisory Committee, resulted in extensive revision of the criteria which will be used to evaluate the recommendations. The Fall and Spring county round-tables prepared a series of recommendations for the plan, most of which have been incorporated as described in the following section.

Comments from Public Discussion

Public discussions included individual and joint meetings with officials, group discussions, and responses to questionnaires. These views were added to the results of the county round-tables in the Fall of 1976 and Spring of 1977. At those two periods, members of the task force held round-table discussions in each county to build interest in the program and to obtain ideas and opinions to be built into the plan while the studies were still underway and the plan not yet drafted. The responses from those meetings, together with information from meetings with officials, group discussions, letters, and questionnaire responses led to five major findings for the plan.

1. Finding - The plan must address basic causes of pollution and stress smaller scale solutions and recycling. Large scale after-the-fact cleanup is to be avoided. (Fall 1976 and Spring 1977.)

Result - The entire basis for the plan is built upon small scale actions by many individual citizens, organizations, and local governments to head off pollution at the source. This includes small scale surface runoff controls, stress on continuing water conservation after the drought and reusing water, source separation of garbage in the home and improved recycling resources, emission control equipment at many businesses and reduced travel by individuals. The only major construction program is the twenty year municipal treatment project list required by the law.

2. Finding - The plan must be as simple as possible, fair to all, and easy to implement. No major regional agencies are to be created. (Fall 1976.)

Result - The water quality, water supply, and solid waste plan proposals all stress simple actions by existing governmental agencies that are designed to be accessible to the public for review. Some major new air quality programs have been necessitated by the seriousness of the problem. No new regional agencies are recommended but increased coordination and cooperation among existing units is stressed.

3. Finding - We must carefully consider and balance the often conflicting environmental, economic, and social priorities. (Fall 1976.)

Result - The draft plan explicitly identifies and balances the impact of one environmental program on another. The economic, social, and financial/organization consequences of proposed control measures are included in the description of each control measure to ensure that knowledge of the costs and the benefits are reflected in the decisions.

4. Finding - Air Quality is the most serious environmental problem in the Bay Area and both land use and technological solutions must be fully explored. Virtually all Bay Area residents agree that air quality is a serious problem. The question of where to look for solutions -- to technology or to land use and transportation -- is a matter of great controversy. (Spring 1977.)

Result - The task force agreed that all feasible solutions must be explored. The air quality plan incorporates control measures based on improved technology and measures based on transportation and land development controls. All are required in order to meet the air quality standards in the Bay Area.

5. Finding - Public education is vital to environmental management programs. Heightened public awareness and environmental education is necessary for the public to understand and accept pollution control programs--and to suggest better ways to clean up the environment. (Spring 1977.)

Result - Environmental education is an important component of each of the management plans: oil recycling, water conservation, solid waste source separation, and reduction of auto trips are examples where public education will be vital to acceptance and implementation of the environmental management plan by individuals.

Additionally, numerous specific ideas and suggestions from the public have been built into the plan including:

- o restricting autos in downtown San Francisco
- o separation of garbage at home
- o oil recycling program regionwide
- o increasing bridge tolls and taxes on parking places
- o small scale water conservation in the home
- o local residences within or close to industrial parks and shopping.

In May, 1977, the minority representatives on the task force expressed concern that ethnic minority views were not being adequately addressed by the task force membership and the work program. In response the task force expanded their membership to add two additional minority elected officials. A special study was made to identify the locations and issues affecting key minority and ethnic populations in the Bay Area. Another special study has defined affirmative action policies for the environmental management program. The impact of plan proposals on poor, ethnic minority, and the elderly will be part of the plan impact information.

B. Program for Review and Approval of the Plan

1. In early fall, the Progress Report of preliminary findings and proposals began discussion prior to release of the draft plan. The report's release generated high media attention to the seriousness of the problems and to the steps which must be considered in solving the problems. The Progress Report described the problem and proposals in tabloid form designed for easy reading and response by the public through questionnaires or marking up the whole tabloid and returning it to the staff. Briefings were held for local government officials, staff, other public agencies, as well as public workshops in every county. Seven thousand copies of the tabloid were printed by ABAG. Private parties reproduced two thousand more copies. Organizations have been encouraged and supported in putting on their own information and review programs about the plan. The meetings focused attention on release of the plan in mid-December and local government review and task force public meetings in January and February. Comments and questions are being reported periodically.
2. The draft plan was released in mid-December. A tabloid for wide distribution is being produced. Briefings for local government, delegates, officials and staff will be held prior to public meetings in January and February. Each local unit is encouraged to hold its own review and public discussion prior to the review at the ABAG General Assembly February 8. A summary of comments and questions

will be prepared for the task force prior to their vote February 22. A media campaign will focus attention on public meetings in each part of the Bay Area and on the task force vote.

3. During March, two key ABAG policy committees, (the Regional Planning Committee and the ABAG Executive Board) will hold hearings on the plan as proposed by the task force. The public will be urged to communicate their positions to individual cities and counties prior to the April 6 vote by the ABAG General Assembly. Briefings may be held for delegates and staff of member governments during this period so they are apprised of any changes in the proposed plan.
4. Once the General Assembly has approved a plan for submittal to the State and Federal agencies, the emphasis of the public participation program will shift toward those agencies. Briefings for public and member governments will cover schedule for State actions and hearings while media attention will be focused on the State and Federal response to local government action.

III. PUBLIC PARTICIPATION PROGRAM IN THE CONTINUING PLANNING PROCESS

The public participation program for continuing planning will stress three basic ideas: an overall human/environmental balance in the Bay Area, user testing and evaluation of implementation measures, and the public as watchdogs of the plan.

A. Overall Human/Environmental Balance

The Bay Area will have a plan that reflects a comprehensive balanced approach to environmental management and human activities. A program will be developed to educate the public on this overall view, which is necessary to long-term life and prosperity of our region, stressing how human activities and environmental management must be related and balanced. The role of the individual citizen, business, and local government will be emphasized. Specific programs will be developed to show how and why some changes by individuals in daily living habits and special building and maintenance efforts are needed to continue the balance. Programs will be developed tailored for various audiences and population groups, working with youth and community groups--including inner city populations and aging--and with other regional institutions dedicated to environmental education.

B. User Testing and Evaluation of Implementation Measures

The plan lays great stress on cooperative action by many individual citizens, businesses, and local governments as the basis for long-term human/environmental balance. A way must be found to make sure

that the separate implementation measures are as simple and effective as possible. Specific individuals and groups whose cooperation will be needed to carry out the plan will be invited to work with the staff and the policy makers to ensure that the measures are implementable. They will be asked to assist in evaluating the measures and making suggestions for improvements so that the measures will receive maximum acceptance and use. Some areas for concern could include: oil recycling, garbage separation in the home, installing emission control equipment, and reducing auto trips. Special problems of low income groups and elderly will be included. Findings and recommendations to increase acceptance and effectiveness of measures will be developed with the staff for possible revision.

C. The Public as Watchdogs of the Plan

The network of local officials, major public interest groups, and interested citizens who have participated in preparation and review and approval of the plan will be kept informed during the year of pending decisions by ABAG and other public agencies which will carry out the plan. The public will be alerted and urged to express its concerns in the many separate public agency decisions necessary to carrying out the plan.

A report on implementation progress to date, new proposals, and other issues affecting the plan will be prepared at the end of the first planning period. It will be circulated to local governments, groups, and individuals for comment at hearings prior to review and amendments to the Environmental Management Plan.

RECOMMENDATIONS OF LOCAL GOVERNMENTS

In addition to other requirements, EPA requires that the plan include the recommendations of all general purpose governments and other agencies affected by plan implementation. The draft plan is being reviewed by those agencies, and as a result of comments, will be modified as a result of comments and recommendations insofar as possible under Federal and State laws and regulations. It is not possible at this time to include recommendations from these agencies in the draft plan, although many recommendations on individual portions of the draft plan have been considered in developing the draft plan.

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